TELEPHONE ENGINEER and MANAGEMENT

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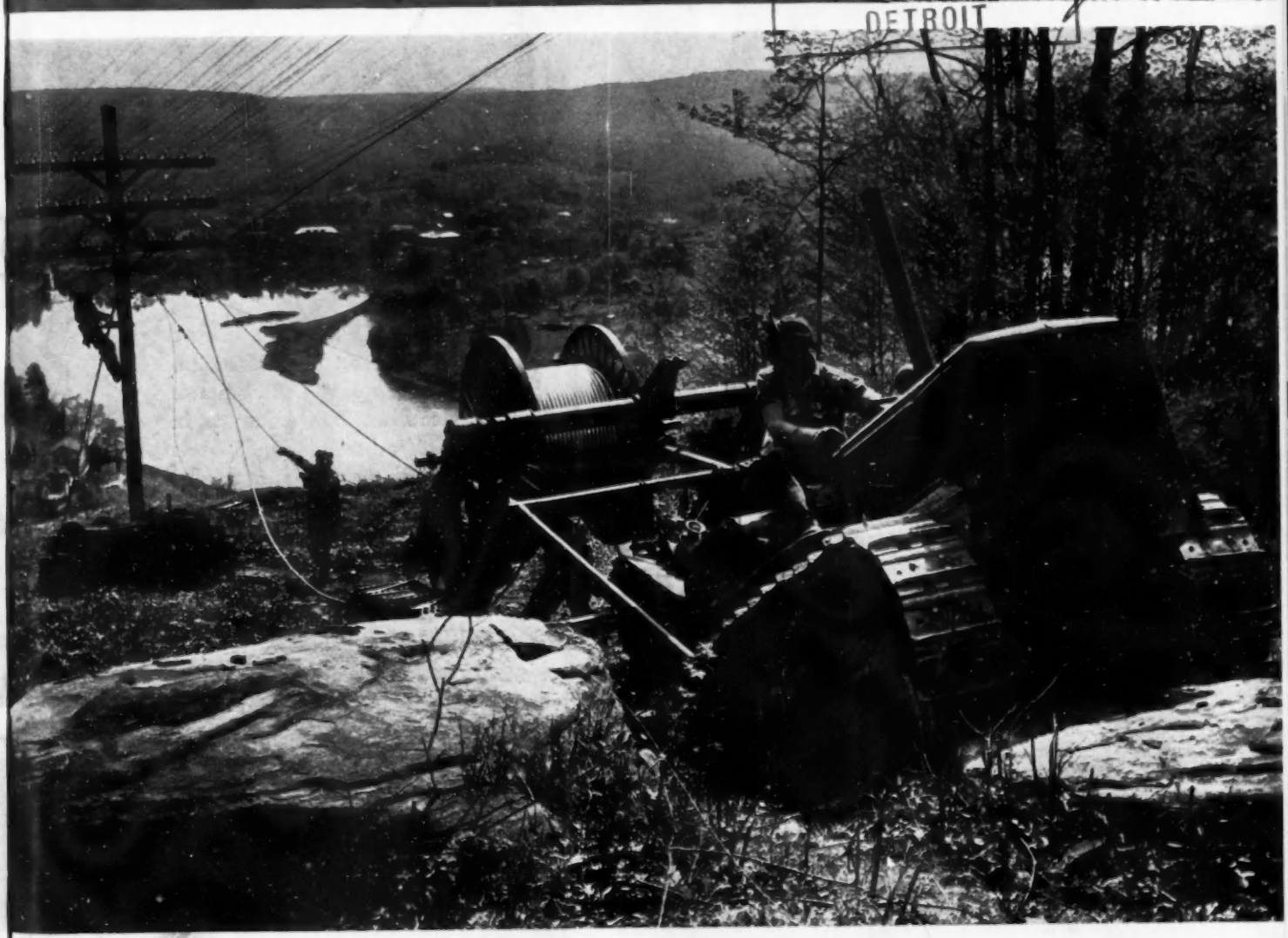


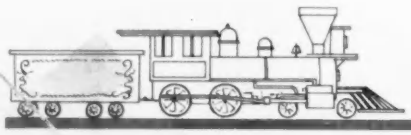
SEPTEMBER, 1949

Since the first train rolled into De Soto in September of 1857 the City's destiny has been linked closely with the business and railway transportation.

The "Made in De Soto, Missouri" label appears today on shoes, dresses, springs — and the freight cars in which these goods are shipped. Manufacturing plants of the International Shoe Company, Susan Shane Dresses and Reynolds Spring Company are located in De Soto as well as the Missouri Pacific Railway's new freight car building plant. The establishment of this freight car building plant in De Soto has greatly stimulated De Soto's recent development.

De Soto is a vigorous, progressive community with a combined industrial and agricultural economy. Telephone subscribers in this area rightfully expect accurate, attractive telephone directories that keep pace with their high standards. To assure subscribers such directories the De Soto Telephone Exchange employs Our Complete Directory Service Plan. In De Soto, as in the More Than 1200 other Cities and Towns for which we publish telephone directories, this Plan operates successfully. Telephone subscribers receive accurate, attractive directories which help the Telephone Company to maintain good subscriber relations and at the same time the Telephone Company itself realizes greater net profit from directory operations.

Our Complete Directory Service Plan is a proven formula for attaining these objectives. Let us explain in detail how well this plan will work for you.



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G. Daniel Baldwin Building, Erie, Pennsylvania • Telephone 2-4187
420 Columbia Street, LaFayette, Indiana • Telephone 4854
Washington Building, Madison, Wisconsin • Telephone—Fairchild 6026

WESTERN OFFICES

604 Pine Avenue, Long Beach 12, California • Telephone 6-7221
1220½ Texas Avenue, Lubbock, Texas • Telephone 2-6330
Peyton Building, Spokane, Washington • Telephone—Main 8644

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Across The Editor's Desk

Meeting of the Banquet & Entertainment Committee for the coming national convention of the United States Independent Telephone Association was held during August. Plans were completed and the Committee is now busy on arrangements for the big affair scheduled for Wednesday evening, October 12. Chairman of the Committee is L. H. WARNER of the Automatic Electric Sales Co., Chicago.

Members are: J. B. COOK, Reliable Electric Co.; L. J. DENNEY, Federal Tel. & Radio Corp.; J. H. KELLOGG, Kellogg Switchboard & Supply Co.; C. H. KNAPP, Stromberg-Carlson Co.; R. C. RENO, Telephony; CHESTER RUTH, Cook Electric Co.; H. C. RYON, North Electric Mfg. Co.; R. W. SIEMUND, Leich Sales Corp. and RAY W. SMITH.

• • •

"Do You Pay Yourself a Salary" is quite a title for an article but it held no fears for BILL CORMAN, our Contributing Editor from Atmore, Alabama. Colonel (he was in the Air Force) Corman has a lot on his chest that will be very interesting to the small telephone company owner and his writings will appear regularly in our magazines. Does the title of this months' article intrigue you as it did us? If so turn to page 43!

• • •

We are looking forward to next month when we hope to have a chance to greet many of the writers whose scrivenings appear in our magazines. It usually takes a national convention of USITA to get them all under one roof. This year we expect to greet JOHN S. BOYLAN of Rochester, N. Y., B. C. BURDEN and JOHN S. REED of Lincoln, Nebr., ROLAND DAVIES and FRED HENCK of our Washington Bureau, and of course, BILL CORMAN, the sage of Atmore, whose article is mentioned above. We also hope that ALBERT W. KIMBER, Washington, D. C., the author of the articles on finance we carry regularly, will join our authors group.

The National Telephone Magazine

TELEPHONE ENGINEER and MANAGEMENT

SEPTEMBER, 1949 **VOL. 53, NUMBER 9**

Editor, RAY W. SMITH • *Advertising Director*, ROY F. SMITH
Managing Editor, JOHN G. REYNOLDS • *Promotion Manager*, DON C. SORENSEN
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FRONT COVER: On a slope overlooking the Delaware River which forms the boundary between Pennsylvania and New York, near Narrowsburg, Pa., employes of the Bell Telephone Company of Pennsylvania proceed with the erection of a new toll cable.—Courtesy of THE TELEPHONE NEWS.

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4 FLOTROLS (3Ø MODEL)

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2500B	3Ø,210–250V	50 amp. 50V	32x22x60	Floor
3750B	3Ø,210–250V	75 amp. 50V	32x22x60	Floor
5000B	3Ø,210–250V	100 amp. 50V	36x26x72	Floor

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ON OUR *Party Line*

Nicknames Stay In Directory

THE DECISION of the United Farmers Telephone Co., Cameron, W. Va., to resume listing subscribers' nicknames in its directory was due primarily to the work of Edwin T. (Eddie) Monroe, president of the Cameron Business and Professional Club. After the company had announced its plan to drop the nicknames, Mr. Monroe hotfooted it over to D. D. (Doc) McCardle, general manager of the company, and persuaded him that dropping the nicknames was wrong, all wrong. "*Take the Bane boys,*" he said, "*Everyone knows them as 'Tim,' 'Buc,' and 'Bus.' But their initials are O. C., R. A., and R. They need that extra tag!*" Doc was convinced. The nicknames will be in the next edition of the directory.

Pigeons Carry The Messages!

WHEN A multi-bungalow resort on the edge of the Mojave desert was first built, telephones were not available. So to establish room service, a crew of 80 trained pigeons were added to the staff. These employees have proven so successful in their many trips twixt lodge and cabins—making no complaints and asking no tips—that they are now permanent equipment. You don't suppose they will eventually replace the—well, lets not even think about it!

Supersonic Service

TAXICAB operators in Binghamton, N. Y., installed mobile radio sets in their cabs to speed up service. But now they figure maybe it's too fast.

A local housewife telephoned for a cab and the dispatcher located one standing only one door away from the woman's home. The driver backed up his cab and within a few seconds of the call rang the doorbell.

"Did you call for a taxi?" he asked.

"I sure did," the woman answered, "but I won't ride with you. You drive too fast, young man."

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See that Planté plate? it's the only pure lead positive plate in any battery . . . and is the reason why Gould Planté delivers unfailing power for more years, at lower cost, than any other battery.

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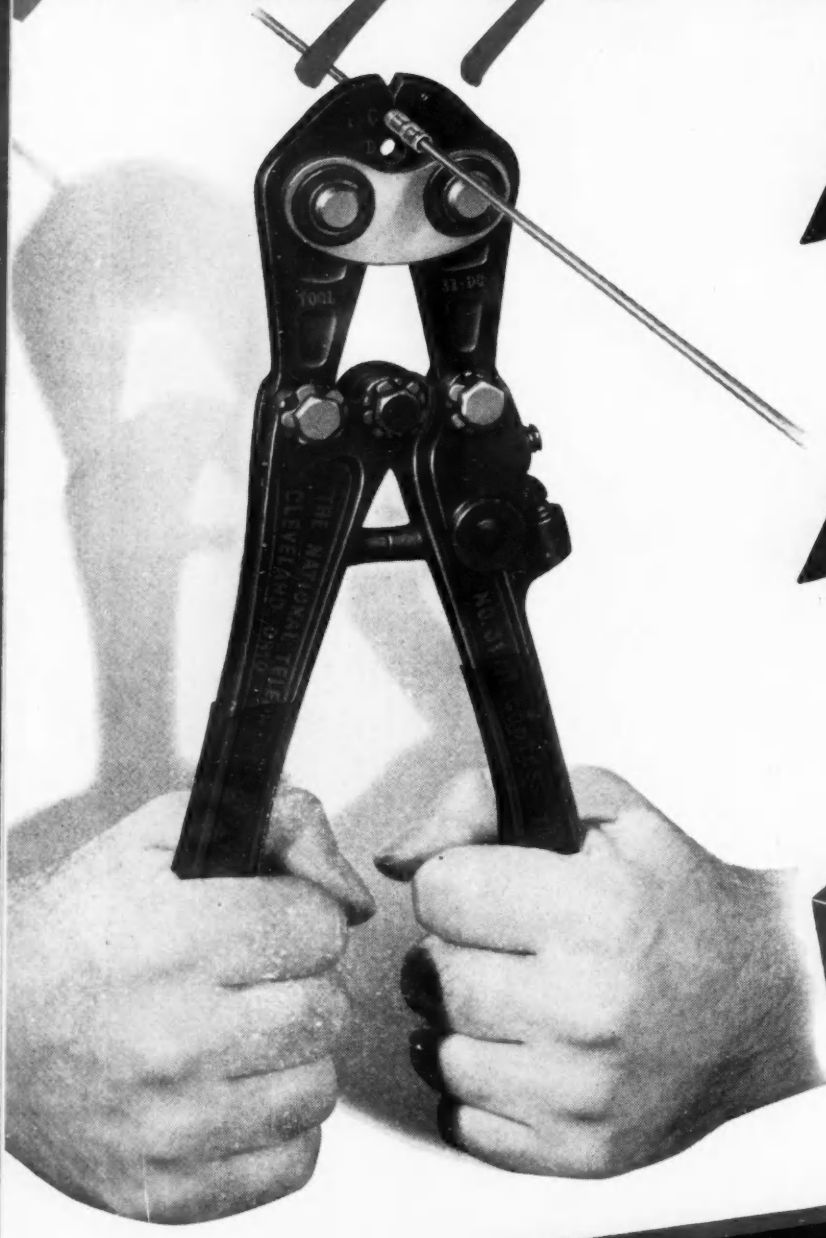

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NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

September 15, 1949

Dear Sir:

A joint House-Senate conference will have before it a Senate-approved amendment to the Fair Labor Standards Act to raise the exemption of telephone operators to exchanges with 750 stations or less, instead of the current 500 stations, following passage by the upper chamber of new minimum wage legislation Aug. 31.

Coming without any apparent objection and with the agreement both of Senator Claude Pepper (D., Fla.), chairman of the Senate Labor subcommittee which handled the legislation, and Senator Robert Taft (R., Ohio), the exemption amendment by Senator Hugh Butler (R., Nebr.) was approved by the legislators without a formal vote. Senator Pepper commented that he was "willng to take the amendment into conference."

Senate approval of new minimum wage legislation, at the same 75-cent level endorsed by the House, came after an amendment by Senator Allen Ellender (D., La.), to set the minimum at 65 cents with a sliding scale based on the cost of living, was beaten down by a 51-26 vote. The amendment received the votes of 16 Democrats, virtually all Southerners, and only 10 Republicans.

Approval of the 750-station exemption for telephone operators came in a rather unusual parliamentary situation, with no actual vote recorded by the Senate. Senators Pepper and Taft merely expressed agreement to the change, but it was officially listed as approved in the Journal of the Senate, the official record. Readers of the Congressonal Record had to make telephone calls to the Senate parliamentarian and chief clerk to make sure that the amendment had been adopted.

* * *

FCC hearings on overall television allocation plans & new rules start Sept. 26. Commission will review need for city-by-city & channel-by-channel study of allocation plans both for present commercial VHF area & proposed UHF sector now used only for experimentation.

TV industry is opposing request of Bell Telephone Laboratories for allocation of 470-500 megacycle (now in TV area) for broadband multi-channel radio telephone system. Bell Lab. plans are thought to mean substantially added channels for mobile radio telephone; TV spokesmen contend if allocation is made it should be in other area, with television getting all spectrum space originally set aside.

* * *

On rate adjustment front: New Hampshire Public Service Commission again denied New England Tel. & Tel. Co. any rate increase in order after state Supreme Court remanded previous rate order, also denying

boost, to commission. Commission applied formula of its own for separation of interstate & intrastate investment; set company's New Hampshire intrastate investment, as of June 30, 1949, at $15,492,000. Company, in following separations manual of National Association of Railroad & Utilities Commissioners, found its investment to be $20,656,000.

Three Florida cities & few individuals expressed opposition at final hearing session Aug. 22 of Florida Railroad & Public Utilities Commission on rate increase application of Peninsular Tel. Co. Two leading Tampa bankers--First National Bank Board chairman R. J. Binnicker, & Exchange National Bank Pres. J. A. Griffin--emphasized that 7% rate of return was imperative to attract capital.

Hearing on rate increase application of Virginia Tel. & Tel. Co., affiliate of Central Tel. Co., has been continued until Apr. 1, 1950, by Virginia Corporation Commission. Hearing had been scheduled for Oct. 3.

* * *

You can correct your date for 1949 United States Independent Telephone Assocation convention. Meeting originally scheduled for Oct. 10-11-12 at Hotel Stevens, Chicago will last 3½ days--Oct. 10-11-12-13; will open on Monday morning and end about 12:30 or 1:00 o'clock on Oct. 13, Association's annual banquet will be held on Wed. evening, Oct. 12. Have you made your hotel reservations?

* * *

In line with its previous actions regarding depreciation rates of Bell System companies, FCC Aug. 31 prescribed new depreciation rates for New Jersey Bell Tel. Co. Company's depreciation charges for 1949 resulting from application of new rates will be about $13.7 million; reduction in proposed charges of about $1.3 million. FCC said new rates are made possible largely by disallowance of proposed increase in depreciation rate for manual central office equipment in connection with dial conversion.

* * *

New Jersey has joined Michigan & Missouri in appointing a woman as member of its regulatory agency. Mrs. Hortense Fuld Kessler, was recently named by Governor Driscoll to Board of Public Utility Commissioners for unexpired term of Commissioner Joseph A. Brophy.

* * *

Highlights: Belden Tel. Co., Home Tel. Co., Northeastern Tel. Co., Meadow Grove Tel. Co., Osmond Tel. Co., (all known as E. C. Bair properties) consolidated into new company, Eastern Nebraska Tel. Co., Blair, Neb. . . . Paul A. Mock, purchased Springview (Neb.) exchange Tel. Co., from Robert Cowger . . . Iowa Independent Tel. Assn. will hold 5 district meetings; Sept. 22 at Knoxville; Sept. 23, Manning; Sept. 27, Primghar; Sept. 28, Jesup; Sept. 29, West Liberty . . . Gerald Cass purchased Hancock (Minn.) Tel. Co. from W. C. Caldwell.

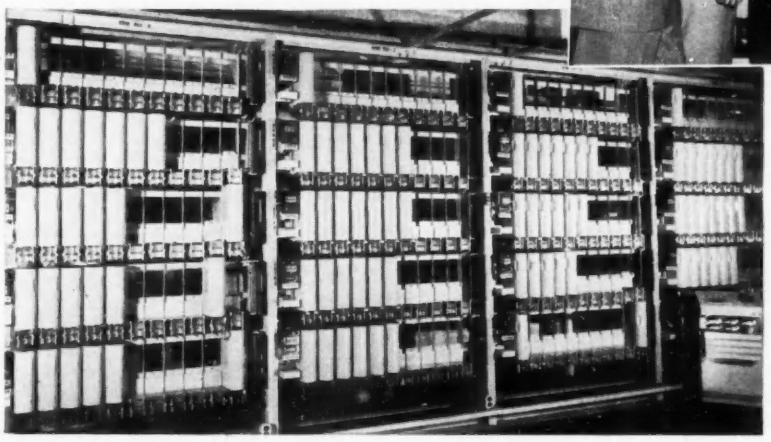
Ray W. Smith, Editor

TWO MORE *Federal* STEP-BY-STEP INSTALLATIONS GO INTO OPERATION

In the East—Erie, Pa. . . . In the West—Oxnard, Calif.
Both Cut Over to FEDERAL Step-by-Step Switching Equipment

Pennsylvania Telephone Corporation cuts over 2,400 lines of Federal Step-by-Step Equipment, serving 3,800 terminals, at the Erie Main Exchange.

At the Erie Main cutover—left to right: R. M. Wopt, Group Plant Supervisor; F. D. Reese, Equipment Engineering Supervisor; A. W. Pyrke, Group Traffic Superintendent; H. L. Williamson, Group Plant Superintendent; D. L. Newberry, Traffic Engineering Supervisor; E. C. Roys, Chief Engineer; and C. E. Jones, Vice President, all of Pennsylvania Telephone Corporation; and J. B. Foster of Federal.



The Oxnard Home Telephone Company cuts over 1,000 lines and 2,900 terminals of Federal Step-by-Step Equipment at Oxnard Exchange.

A partial view of the Connector Switch Frames of the 1,000-line Federal Step-by-Step installation at the Oxnard Exchange of the Oxnard Home Telephone Company. At lower right is a Federal Portable Step-by-Step Routine Test Set.

Erie, Pennsylvania, and Oxnard, California—nearly a continent apart in distance yet close together in the fine quality of dial telephone service being provided by their new Federal Step-by-Step Dial Switching System installations. In each city Federal Step-by-Step was selected as a reliable and economical means of supplementing existing dial equipment.

At Erie, the 2,400-line Federal System was cut over July 16, 1949, interworks with 9,000 lines of plunger-type line equipment, and includes terminal-per-station operation, inter-toll dialing, provisions for conversation timing and an official Step-by-Step PABX, arranged for restrictive service by level.

At Oxnard, the 1,000-line Federal Step-by-Step installation was cut over on July 9, 1949. It interworks with a local exchange consisting of 800-terminal Step-by-Step type equipment and is designed for future addition of inter-toll dial facilities to connect the proposed Bell System network.

These two cutovers to Federal Step-by-Step Dial Switching Equipment are representative of the widespread acceptance of Federal when specifying Step-by-Step type equipment. Whether your need is for a complete system or for equipment to interwork with existing exchange facilities, Federal can meet your requirements with advantageous prices and attractive delivery schedules. Write today for details.

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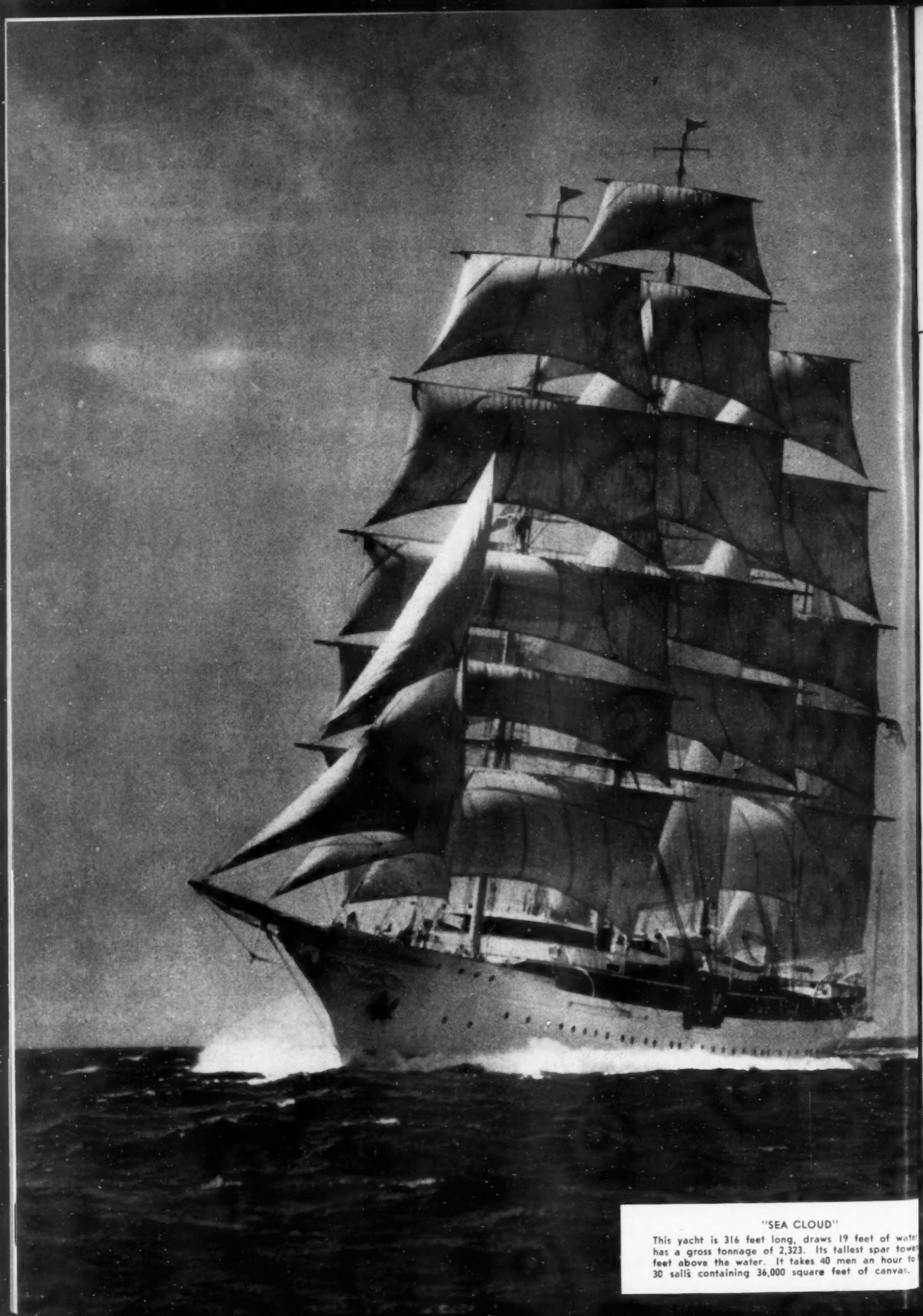

"SEA CLOUD"

This yacht is 316 feet long, draws 19 feet of water has a gross tonnage of 2,323. Its tallest spar towe feet above the water. It takes 40 men an hour to 30 sails containing 36,000 square feet of canvas.

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Equipped with 30-Line

KELLOGG RELAYMATIC SWITCHBOARD

Instant dial telephone communication between key points on the fabulous "Sea Cloud," world's largest yacht, is provided by a Kellogg Relaymatic telephone system—complete with 30 lines and equipped throughout with Kellogg Masterphones. The system was installed by Telephone Sales & Service Corp., N. Y., a Kellogg wholly-owned subsidiary.

This luxuriously furnished 4-masted ship is owned by Mrs. Joseph E. Davies, wife of the former U. S. Ambassador to Russia. In keeping with the tasteful fittings aboard this yacht, which include gold-plated wash basins, costly china, etc., Kellogg telephone equipment adds the final touch in smartly designed, modern, dependable communication.

In addition to providing complete dial operation with a minimum of maintenance, the Kellogg Relaymatic equipment is unaffected by extremes of temperature or the ravages of salt air and water.

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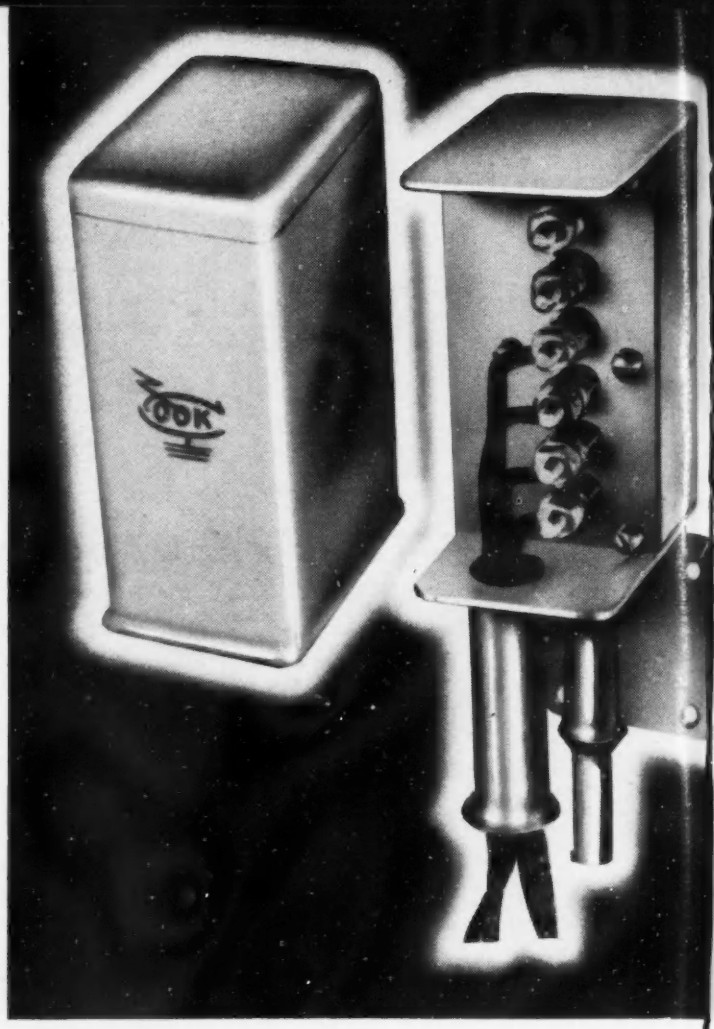
Successful INDEPENDENT TELEPHONE MAN Says:

MINOR CORMAN
Southland Telephone Co.
Atmore, Ala.

"We appreciate the fast, efficient service that Kellogg has always given us. They make sure you get the right equipment, and that you get it on time."



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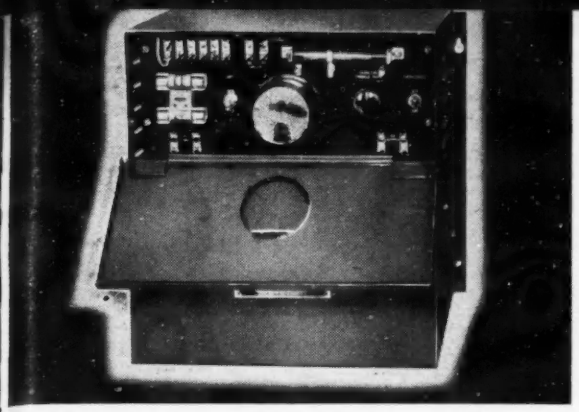
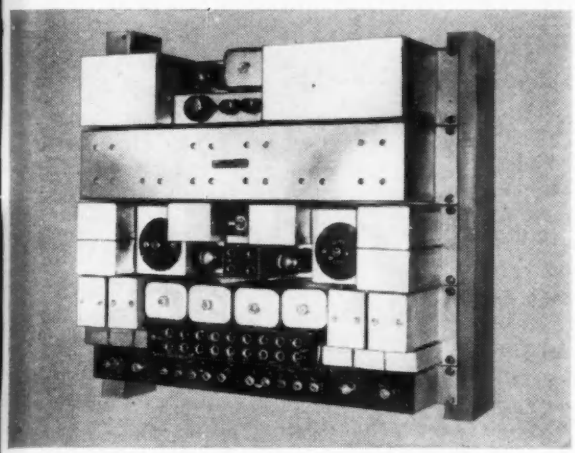


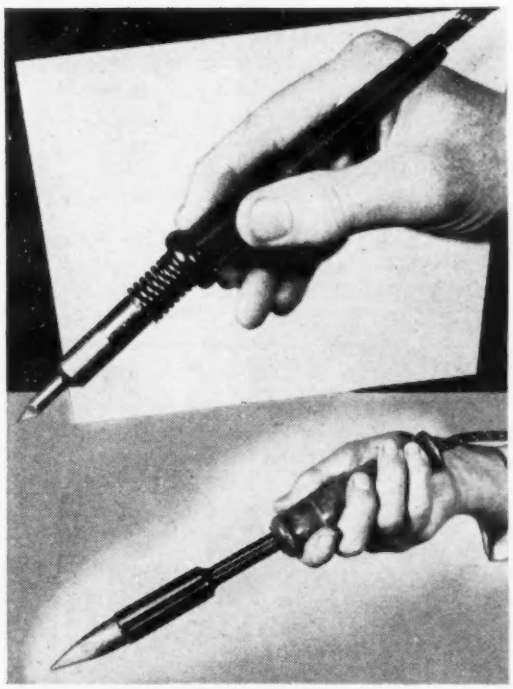
Tip-Top Shape! Automatic battery charging end troubles caused by over- or under-charging. Keeps storage batteries in tip-top shape—fully charged at all times. RectiChargeR automatic charging prolongs battery life. That's why this RAYTHEON MFG. CO. unit is so popular everywhere!



For Strong, Clear Toll Transmission and a quiet circuit, use the Kellogg Repeater. New, sharp, cut-off filter aids in obtaining maximum usable gain. Important features are "unit" construction and ease of adjustment. Made by KELLOGG SWITCHBOARD AND SUPPLY COMPANY.

Here's A "Rolling Storeroom" you'll find ideal for rural maintenance and installation. It's the neat, well-balanced American Truck Body #4551-40" wide x 70" long, weighing 650 lbs. Handy inside compartments make everything quickly accessible. Overhead brackets accommodate 24' and 6' ladders. Made by the AMERICAN COACH & BODY CO.

ng Life Expectancy is built into pressure-ated Southern Pine Poles and Crossarms. arefully and thoroughly treated by AMERI-AN CREOSOTE WORKS, INC., these poles ve the extra durability required for service der toughest climatic conditions.



Neat, Precision Soldering is easy when you use a Vulcan Electric Soldering Iron. Made by VULCAN ELECTRIC CO., these irons give unimpaired heat production, last longer. Made in 15 sizes of screw and plug tip types—including the "Pygmy" tool for delicate soldering.

Your Battery Problems are Solved when you put Gould Planté and Flotè Batteries to work. Unique features of design cut maintenance and charging costs, lengthen life and reduce replacements. Made by GOULD STORAGE BATTERY CORP., a leader in their field.

Free Literature Department

New Product Literature of Practical Interest

All literature described in this department may be obtained by sending in the handy blank at the bottom of this page.

CODE CALL UNIT: New Code Call Unit, entirely new in design and construction is now being manufactured by Signal Engineering & Manufacturing Co. Its principal function is that when a person fails to answer the telephone, the operator presses the button broadcasting that person's code call number three times on signaling devices located throughout the premises. The telephone call is promptly completed through the nearest extension. Dial in position 1 is for standard 3-round call. When turned to position 2, it allows for continuous repetition call.

The sending station is furnished complete for 20 calls. An initial installation of 20 call station can be increased to 40 calls at any time, without change in installaiton. A new bulletin fully describes advantages, operating features, and illustrates components with typical wiring diagrams.—*Request FL* 334.

INDUSTRIAL LIGHTING: The new Guth Mazelite features turret sockets work quick, easy lamp changes. The Mazelite also has a hinged Reflector that is easily opened to either side or completely removed for cleaning.—*Request FL* 335.

LEAK STOPPAGE: Latest Stonhard Stontite Folder gives complete information on "How To Stop Leaks" —from actual breaks to hair-crack water-seepage (even against direct hydro-static pressure)—in all types of above and below ground masonry construction.—*Request FL* 336.

LUGS & CONNECTORS:—Complete 80-page manual on electrical lugs and connectors, is filled with actual photographs in color, technical data use and installation, engineering information and a thorough compilation of the innumerable dimensions, ampere ratings, wire sizes, weights and descriptions and other material which is important for use in production and maintenance. This is said to be the first such manual for use in industry and is rated as an essential for designers, engineers and production men.—*Request FL* 337.

SCREWDRIVER: New Greenlee Angle-Screw Driver, eliminates time-wasting pre-boring and does away with the possibility of worker injury, resulting from the old method of hand setting and hand driving of angle-screws. New folder describes this tool; shows how easy it is to insert an angle-screw and give it a few turns with a standard brace.—*Request FL* 338.

STRAIN GAGES: A new 4-page Baldwin bulletin, No. 279, has been prepared to illustrate the wide variety of uses that have been made of SR-4 bonded resistance wire strain gages. The numerous types of gages that are now available for determining the stresses and strains in structures and parts in service or when subjected to stresses in the laboratory, are also described and illustrated.—*Request FL* 339.

TABULATING CARD FILE: Twenty-two removable tray type drawers providing 573 lineal inches of net filing capacity are mounted on eleven sturdy electro-galvanized carriages. Each carriage is free rolling because it is fitted with a full ball bearing progressive suspension. The all-welded furniture steel cabinet is reinforced with heavy gauge case channels securely spot welded to upright channel reinforcements providing added strength, since the cabinets card load approximates 500 pounds.

A novel easy acting positive lock compressor firmly holds and protects the cards when handling or stacking trays.

Loose trays are available for housing cards on the 7-3/8" or 3-1/4" edge, for those users that have a selective pulling operation on tabulating cards.—*Request FL* 340.

WOOD PRESERVATIVES:—New folder describes line of chemical wood preservatives. Designed to give general information on several of products, including Penta Preservative, Ambrocide, Permatox 10-S and Permatox WR, the bulletin has been printed in both English and Spanish.

Title of the folder is "How to Protect Wood Chemically."—*Request FL* 341.

SEND IN THIS COUPON FOR MORE INFORMATION

Telephone Engineer Publishing Corp.
7720 N. Sheridan Road
Chicago 26, Illinois

Please forward the following literature described in the Sept., 1949 issue of TELEPHONE ENGINEER AND MANAGEMENT. (Check information desired.)

FREE LITERATURE

FL 334..... FL 335..... FL 336..... FL 337.....
FL 338..... FL 339..... FL 340..... FL 341.....

Name ..... **Title** .....

Company .....

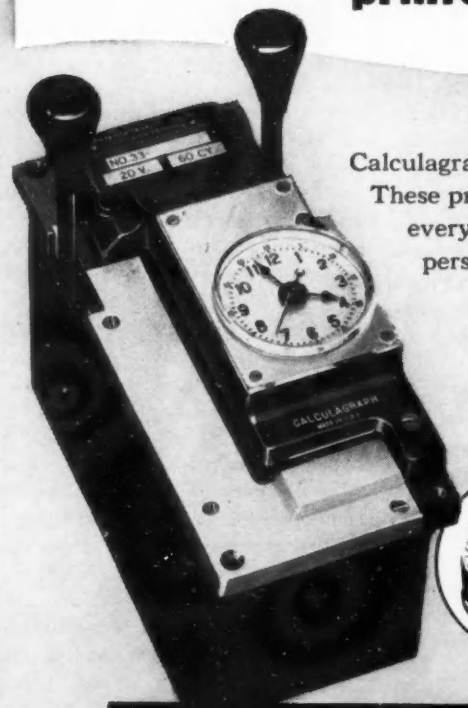
Street Address .....

Town ..... **Zone** ..... **State** .....

If your toll call revenues depend on PENCIL work!

CALCULAGRAPH

is one sure way to collect all the revenue due with accurate, automatically calculated, printed toll time records



Calculagraph printed elapsed time records are accurate to the second. These precise printed records assure collection of all the revenue due every toll call. Automatically computed, they relieve switchboard personnel of time-consuming detail work that slows switchboard service. Calculagraph is the engineered, revenue-vital equipment that no exchange—large or small—can afford to overlook. Available for switchboard or portable mounting, they are fully described in four illustrated catalogs. Write for yours, now, on company letterhead.

COMPLETELY ACCURATE TO THE SECOND
AUTOMATICALLY COMPUTES ELAPSED TIME
PRINTS THE RECORD FOR PERMANENT FILING
FACILITATES SWITCHBOARD SERVICE
OPERATES SILENTLY

CALCULAGRAPH COMPANY · INC

HARRISON • NEW JERSEY

THE STANDARD FOR ACCURACY SINCE 1892

The torchlight telegraph of Polybius

IT TOOK a "communications expert" plus two nimble operators to spell out a message on this unusual semaphore, used by the Greeks around 200 B.C.

Brainchild of an historian named Polybius, this system was limited to short distances. Nevertheless, it represented one of the first types of coded communication.

Nowadays, messages streak over distances unimaginable to the ancients. On guard over many telephone and telegraph lines are Hemingray Insulators, contributing greatly to overall efficiency.

Hemingray No. 56

★

This advertisement is one of the Hemingray series on the history of communication.

HEMINGRAY INSULATORS

American Structural Products Company

MUNCIE, INDIANA

Subsidiary of **Owens-Illinois Glass Company**

People

Because of ill health, FRANK LITEL resigned as president of the Tekamah Farmers Telephone Co., Tekamah, Kans., at a special meeting of the board of directors. BAYARD JOHNSON was elected to fill the vacancy.

Mr. Litel had been on the board of directors since 1934 and has given much time and effort to rebuilding the lines and improving service.

T. O. CAGLE, manager of the Tuscola, Ill., office of the Illinois Commercial Telephone Co., has accepted a position as manager of the company's office at Belvidere, Ill. MARSHALL BATES, who has been manager of the Odell, Ill. office for 12 years, succeeds Mr. Cagle.

R. Y. COOPER, Elkhart, Ind., district commercial manager for the Indiana Associated Telephone Corp., has been transferred to the Lafayette, Ind., office of the company, in the statistical branch of the group plant division.

WILBUR H. VAN HORN, area commercial manager and former district manager, will have charge of the Elkhart office until a new appointment is made.

WILLIAM C. BOLENIUS and BARTLETT T. MILLER, vice presidents of the American Telephone & Telegraph Co., have been elected to the board of directors of Bell Telephone Laboratories. They fill vacancies created by the resignations of O. B. BLACKWELL and K. S. MCHUGH. Mr. Blackwell, an assistant vice president of A. T. & T., will retire shortly, and Mr. McHugh, until recently a vice president of A. T. & T., is now president of the New York Telephone Co.

CLEO F. CRAIG was elected a director of American Telephone & Telegraph Co. August 17 at a meeting of the board of directors of the company. He is a vice president of the company in charge of operations,

CLEO F. CRAIG

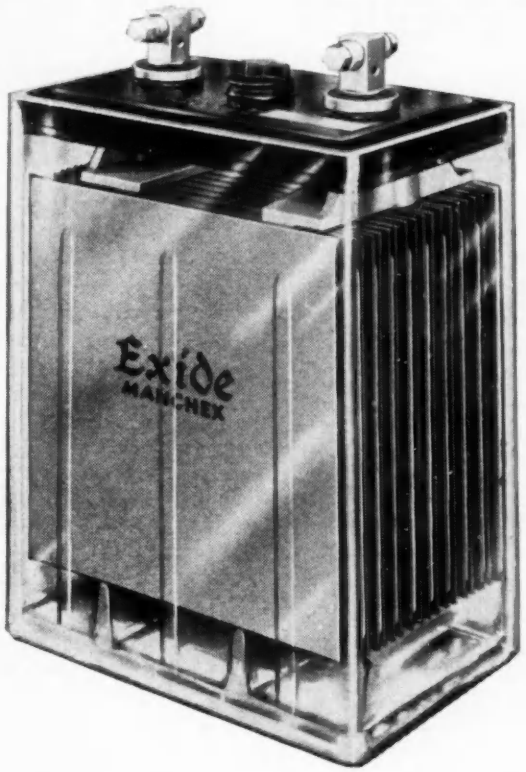
engineering and revenue requirements. All of his business career has been with the company, which he joined 36 years ago as an equipment man at St. Louis. Prior to his appointment to head operations, engineering and revenue requirements a year ago, he had served as vice president in charge of personnel relations for seven years and as general manager and vice president in charge of the Long Lines. He is also a director of the National Safety Council and the Citizens First National Bank & Trust Company of Ridgewood, N. J., where he lives; and a member of the Corporation of Presbyterian Hospital, N. Y.

EDWARD DASKAM, JR. has been appointed radio engineer of General Telephone System, effective September 1. Mr. Daskam, who has been an assistant radio engineer for the System since 1946, succeeds E. H. B. BARTELINK who has resigned to join General Precision Laboratories, Inc., Pleasantville, N. Y.

Mr. Daskam was graduated from the University of Texas, where he received his B. S. in Electrical En-

(Please turn to page 20)

The New EXIDE-MANCHEX Battery



DEPENDABLE, ECONOMICAL POWER for telephone service . . .

Only the Exide-Manchex Battery has the manchester positive plate . . . the unique plate with the lead button construction. The buttons, rolled strips of corrugated lead, are pressed into holes of the lead antimony grid. Forming action expands the buttons and locks them securely in place. Only a comparatively small portion of the total lead in the buttons is formed initially into active material; the remainder is available for gradual conversion in service.

All other parts of the elements—negative plates, separators, spacers, conductors, terminals—are built to match the service qualities of the positive plate. And the result: extra long life, low maintenance cost, improved electrical characteristics, increased power (watt) output per unit of space, less weight per ampere hour output.

Use Exide-Manchex Batteries for all stationary power requirements—common battery, emergency reserve, signaling, PBX and other applications.

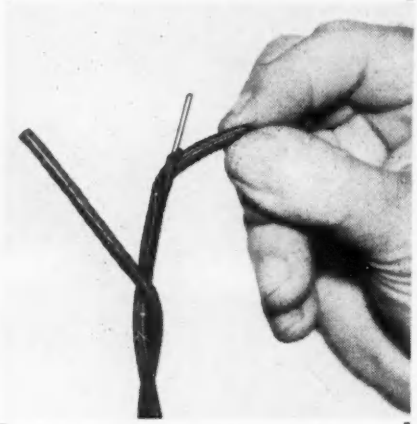
Exide
BATTERIES

"Exide" *Reg. Trade-mark U. S. Pat. Off.*

1888 . . . DEPENDABLE BATTERIES FOR 61 YEARS . . . 1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • *Exide Batteries of Canada, Limited, Toronto*

DEFINITELY SUPERIOR



Just One Look At The NEW

Paragon N. T. Bronze DROP WIRE

will convince you of its definite superiority. It has—

Conductivity—The high tensile pure bronze conductor in 17 A.W.G. (B. & S.) gauge shows 80% conductivity. Assures no loss in signal clarity.

Strength—This high tensile B.B. bronze tested to a rating of 90,300 P.S.I. Capable of carrying, in drop wire lengths, any sleet load.

Insulation—Same rubber insulation—long-ageing to assure resistance to heat and humidity—as electric power line wire. Elasticity combined with adhesion to conductor is unbelievably great. This is encased in a seamless sheath of Paraprene, applied by the continuous vulcanizing process, assuring perfect centering of the conductor. Resistant to oil, acid, heat, cold, salt or alkali winds. And it's tough—unbelievably tough.

Workability—because of the elasticity of the Paraprene, Paragon H.T. Bronze Drop Wire is completely flexible—ties closely and firmly without cracking.

May be had with Paragon's superior rubber and weather proof, powdered mica finish braid if desired.

Delivery—Prompt delivery from factory at Sycamore, Ill. 1,000 ft. coils shipped in individual cartons.

GENUINE IRONITE—The economy drop wire for use with iron line wire, ready for immediate delivery in 1,000 ft. coils in heavy individual cartons.

An extra strength, "Flozinc" coated iron conductor—rubber insulation protected with cotton and mineral fiber weatherproof braid-finished with powdered mica to U.R.C. specifications. A truly fine drop wire.

Write for prices and literature
Ask for Bulletin 128

TELEPHONE DIVISION

PARAGON ELECTRIC CO.

Two Rivers **Wisconsin**

gineering. After that he joined the electronics department of General Electric Company in Schenectady and, during the war, he served as Radar Officer, Lt. J. G., with the United States Navy.

KENNETH L. COCHRAN and EUGENE A. SLUSSER will continue in the System's radio department as assistant radio engineers. Mr. Cochran, who has been with General Telephone since 1946, was graduated from Iowa State College and after that was with General Electric Company in its research laboratory and electronics department. Mr. Slusser, a graduate of the University of Denver, was formerly employed by Heiland Research Corporation, Denver, and prior to that was a staff member at Radiation Laboratory, Massachusetts Institute of Technology. He has been with General Telephone since 1947.

JAMES B. MOORE, assistant vice president (operations), Northwestern Bell Telephone Co., has been appointed general manager for South Dakota, a new position in the company, effective September 16, with headquarters at Sioux Falls. He will be responsible for operating results in South Dakota and report to A. F. JACOBSON, vice president and general manager of the Nebraska-South Dakota Area.

HILAND H. WHEELER, vice president and general manager of the Lincoln (Neb.) Telephone & Telegraph Co., has been named a director of the Lincoln chamber of commerce, to complete the unexpired term of the late R. A. PHILLIPS.

HILAND H. WHEELER

J. E. CARROLL, has been appointed commercial general sales manager of the Graybar Electric Co. Mr. Carroll will be responsible for providing special service to customers of the company who operate in several of its sales districts. He will share duties with W. J. GOERSCH, Graybar's manager, lamp sales, in coordinating company resources further to develop business with national customers.

Coming Conventions

Tennessee Independent Telephone Association, New Southern Hotel, Jackson, Tenn., Sept. 16.

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, Sept. 22-23.

Michigan Independent Telephone Association, Olds Hotel, Lansing, Sept. 22-23.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 10, 11, 12, 13.

Virginia Independent Telephone Association, Chamberlin Hotel, Old Point Comfort, Va., October 20-21.

North Carolina Independent Telephone Association, Carolina Hotel, Pinehurst. N. C., October 27-28.

South Carolina Independent Telephone Association, Wade Hampton Hotel, Columbia, Nov. 1-2.

Florida Telephone Association, Sheraton Plaza Hotel, Daytona Beach, Nov. 8-9.

Oklahoma Telephone Association, Huckins Hotel, Oklahoma City, Nov. 8-9.

South Dakota Telephone Association, Cataract Hotel, Sioux Falls, Nov. 9-10.

Georgia Independent Telephone Association, Henry Grady, Hotel, Atlanta, Ga., November 14-15.

Missouri Telephone Association, Governor Hotel, Jefferson City, Mo., November 14-15.

Alabama Independent Telephone Association, Jefferson Davis Hotel, Montgomery, Ala., November 17-18.

THE UNITED STATES
INDEPENDENT TELEPHONE ASSOCIATION
52nd ANNUAL CONVENTION

Stevens Hotel • Chicago
OCTOBER 10-11-12-13

THREE AND ONE-HALF DAYS
(Monday, Tuesday, Wednesday, Thursday-Noon)

IMPORTANT MEETINGS OF INTEREST TO ALL

INDEPENDENT TELEPHONE PEOPLE

PLAN NOW TO ATTEND

CONFERENCES
Plant—Traffic—Commercial—Accounting—Answers to Tomorrow's Problems

GENERAL SESSIONS
Topics of Outstanding Importance
Dynamic-Entertaining Speakers

MANUFACTURERS' EXHIBITS
Displaying the Latest in Technology and Design

U-S-I-T-A ANNUAL BANQUET and Entertainment

(Wednesday Evening—October 12)

Surpassing Previous High Records for Excellence of Food—Talented Entertainment

ANNUAL MEETING OF
INDEPENDENT TELEPHONE PIONEER ASSOCIATION

THE UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

411-17 Munsey Building, Washington, D. C.

You get Security by the Carload

with TAYLOR-COLQUITT Yellow Pine Poles

Recommended and Distributed by

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILL.

There's no question about the quality of southern yellow pine for telephone poles. And when you get Taylor-Colquitt yellow pine poles you get the finest. Taylor-Colquitt poles are pressure treated with the highest grade creosote oil. Order Taylor-Colquitt yellow pine poles for the most economical cost per year of service.

INVEST YOUR "PIN MONEY" IN THE BEST

LOCUST PINS

Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

OAK BRACKETS

Oak pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

GLASS INSULATORS

Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

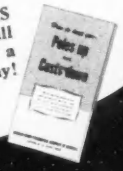
Non-porous, non-deteriorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

BUCKEYE TELEPHONE and SUPPLY CO.
COLUMBUS 6, OHIO

THIS $50.00 POLE *Could Have Been* SAVED *for* 50¢*

***50c WORTH OF OSMOSE MATERIALS WOULD HAVE PRESERVED IT FOR YEARS OF EXTRA LIFE.** Pole replacement can cost anywhere from $40 to $100 including change-over. OSMOPLASTIC Wood Preservative can eliminate much of this cost by MAKING POLES LAST LONGER. Find out how YOU can CUT COSTS NOW.

Send For FREE BOOKLET "How to keep POLES UP and COSTS DOWN." Gives all facts! Shows how to save poles for a FEW CENTS each! Write for it, today!



OSMOPLASTIC

OSMOSE WOOD PRESERVING COMPANY OF AMERICA, INC.
1451 BAILEY AVE. BUFFALO 12, N. Y.

NOW

More Efficient, More Compact

STILL

More Dependable for Trouble-free Service

ALWAYS.

The Most Economical Way to Provide Stabilized DC Voltage for Small Common Battery Manual and Machine Switching Exchanges of All Types.

RAYTHEON RECTIFILTER*

No batteries to service . . . no adjustments to make . . . practically no maintenance required — that, in a neat, compact, space-saving nutshell, is the new Raytheon RECTIFILTER. It's a sure cure for power problems . . . just plug it in to a standard AC source — close the door — and forget it. And all the while you save because the RECTIFILTER . . .

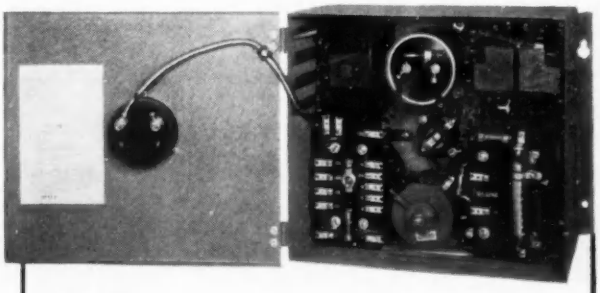
Eliminates Batteries

Minimizes Power Costs

Eliminates Frequent Inspection and Service

Releases wires carrying charging current for revenue-producing service.

Available in a wide range of sizes with provision, where necessary, for switching to an emergency DC source. Write for complete information.



RECTIFILTER with door open to show the compact arrangement of the dry disc rectifying unit and other long-life components. No moving parts.

*Reg. U. S. Patent Office

RAYTHEON

Excellence in Electronics

RAYTHEON MANUFACTURING COMPANY

WALTHAM 54, MASSACHUSETTS • WALTHAM 5-5860

Industrial and Commercial Electronic Equipment, Broadcast Equipment, Tubes and Accessories

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QUALITY · SERVICE · PRICE

Our foremost thought at all times is to give every customer of Telephone Repair & Supply Company the Best Possible Quality—Prompt and Dependable Service and the Most Reasonable Prices conditions permit . . .

Daniel H. McNulty **President and Manager**

A Great Team For Rural Service

The Dan Mac "Like New" Bantam telephone in a fine oak cabinet with battery compartment and the new Leich 900 telephone provide every essential for the finest, modern party line service.

Alnico generators, anti-sidetone circuits and induction coils, melodious positive ringers and handsets of the latest design. Available from stock.

Bantam—		Leich 900	
1600 ohm	$22.00	1600 ohm	$29.35
2500 "	22.50	2500 "	29.55

NICOPRESS SPLICING SLEEVES & TOOLS

Code No.	Splice	Per 100
3-045B.	No. 17 and No. 18 drop, bridle and interior wire	$1.95
4-109x045C.	No. 12 Iron Wire to No. 17 or 18 drop, bridle or interior wire	7.10
4-109C.	No. 12 Iron Wire	4.75
2-102C.	No. 12 Iron Wire, rusty	4.70
94-109C.	Offset Dead Ends No. 12 Iron Wire	8.30
R-4-109C.	Replacement of No. 12 Iron Splice	11.80

17-2 Tool for drop, bridle and interior wire splices, each 2.75

31DC Tool for No. 12 and 14 Iron wire splices, each 8 80

All other Nicopress sleeves available on short notice.

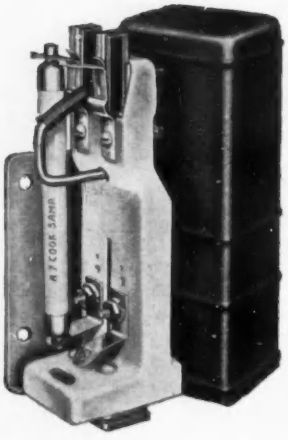
LONG LIFE TELEPHONE BATTERIES

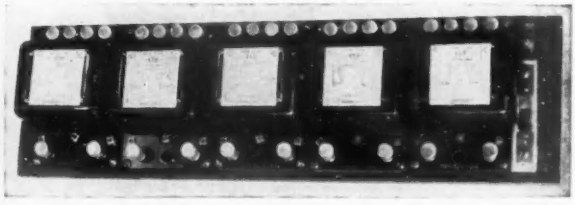
Ray-O-Vac No. 6, less than 50, each 48c
50 or more, each 45c
A carton of 25 batteries weighs 58 pounds. 2 cartons or more shipped prepaid.

O-7 STATION PROTECTOR

This protector is so widely accepted as to be virtually the standard of the Independent telephone industry. It is equipped with the same fuse as all Cook cable terminals. Special porcelain base, Everdur bolts and studs, phosphor bronze clips and grounded zinc cover give this protector top position.

Available from stock. Each $1.60





DAN MAC KICK COILS

Dan-Mac Kick Coils for connecting C. B. Telephones to Magneto Switchboards providing modern private line service.
Strip of 5 coils with battery circuit wired and fused, per strip 23.50
Single Coil, each .....$ 4.00

CONSTRUCTION SUPPLIES

17/2 Bronze Drop Wire, twisted pair, rubber insulated, Neoprene jacketed.		17/2 Bronze Drop Wire, parallel, rubber insulated, Neoprene jacketed.	
5,000 feet	$19.80 M ft.	5,000 feet	$18.45 M ft.
1,000 feet	22.00 M ft.	1,000 feet	20.50 M ft.

We Are As Near As Your Telephone

TELEPHONE REPAIR & SUPPLY CO.

Telephone ROgers Park 4-3818 • **1760 Lunt Ave., Chicago 26, Illinois**

EDITORIAL

Melancholy Days

THE POET who sighed that "the melancholy days are come, the saddest of the year", would probably have felt all the more so if he had had a telephone plant to maintain.

To the poet the melancholy days were those of wailing winds and naked woods and meadows brown and sere. To the telephone man they are winter days when he clings to the top of a pole, with one of those wailing winds whistling up under his coat tail, repairing a line break that wouldn't have happened if he had done a good job of preventive maintenance in the Fall.

There are very few sound ways by which a telephone company can reduce its present-day high costs of operation. Preventive maintenance is one of them, and perhaps the soundest of all.

A telephone manager has told us that since his company established, some years ago, a policy of doing a thorough job of preventive maintenance every Fall, their records show that they have cut emergency repair jobs in the winter by fully one-half. This has resulted, he says, in a considerable saving of expense as well as in an improvement in their service during the winter.

The most expensive type of maintenance is emergency maintenance—the kind that must be done immediately, regardless of weather and of cost. A considerable number of such cases arise, every winter, from plant failures that would have been prevented by a careful survey of the plant, and by preventive maintenance in the Fall.

The winter of 1948-49 was as damaging to telephone plants, in many parts of the country, as any that has been experienced in a long time. There are still, even now, telephone plants that have not been put fully back into shape from the results of wind storms, sleet and other damages of last winter. Such cases require, in this Fall of 1949, even a more thorough schedule of preventive maintenance than usual.

There is nothing at all mysterious about this proposition of preventive maintenance. And, the smaller the company, the simpler it is. Every good plant man knows at least the major weaknesses now existing in his plant. A careful survey of the plant will show many—usually most—of the minor bad spots.

It is usually cheaper to correct these weaknesses before winter, and therefore to prevent actual failures during the winter, than it is to repair the breaks during the winter. It is also certainly much more satisfying to both the company and its patrons to avoid those interruptions in the service that occur when the failure actually happens.

The seafaring trade has a term—"battened down"—which is appropriate to the plant end of the telephone business. When a ship is battened down all its hatches are closed and sealed, movable objects on the decks are tightly lashed, and the ship is made ready, in every practicable way, to face a storm.

It's a smart thing, we believe, to batten down the telephone plant—as nearly as that can be done—to face the winter.

Preventive maintenance is the best possible type of plant insurance the telephone company can buy.

It won't avoid all winter plant troubles, of course, but it will certainly make the winter days less melancholy for telephone people—and save the company money, too!

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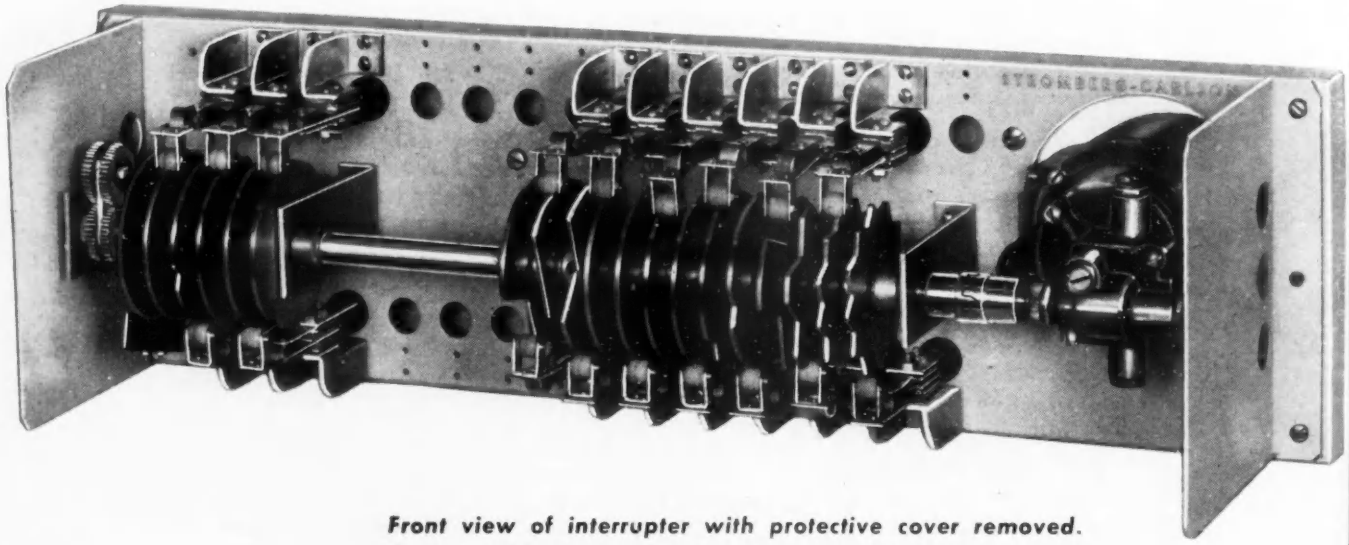
STROMBERG-CARLSON PROUDLY

THE finest interrupter

The development of a MOTOR-DRIVEN interrupter machine by *telephone* engineers for *telephone* use has long been a need in the industry—a need now fulfilled. More than a year ago, our Engineering staff tackled the problem of designing such a machine. It had to be versatile; it had to be easily powered; it had to be adaptable to the custom-made requirements of our XY System; it had to be easily maintained; and it had to be inexpensive.

It's done—and it's so good that we unhesitatingly predict it will outmode every type of interrupter now on the market. Its "Premiere" use will occur when the Middleton, Wisc., XY exchange is cut over in October. Meanwhile, you can get complete details on operation, delivery and prices from your nearest Stromberg-Carlson representative.



Front view of interrupter with protective cover removed. Capacity: 28 circuits, 22 operating at either 6 or 8-second cycle; 6 operating at a 2-minute cycle, all on ONE shaft! Interrupter occupies only 150 square inches of space.

STROMBERG-CARLSON

Factory, General Offices: Rochester 3, N. Y.
Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto

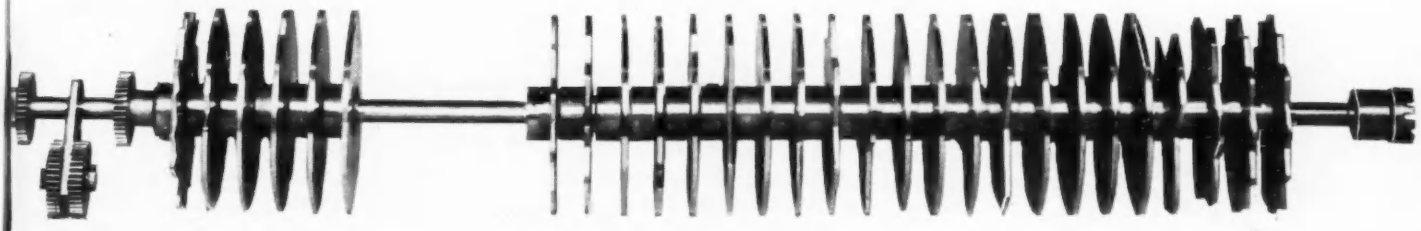
*TELEPHONES, SWITCHBOARDS • SOUND EQUIPMENT AND ELECTRONIC CARILLO*USTR

...NNOUNCES...

...VER DESIGNED FOR TELEPHONE USE!

The switch is snap action, requiring no relay to open or close it. Self-cleaning contacts. In life tests, this switch has performed more than one billion mechanical operations without failure! Contact make or break can be tuned within 50 milliseconds.

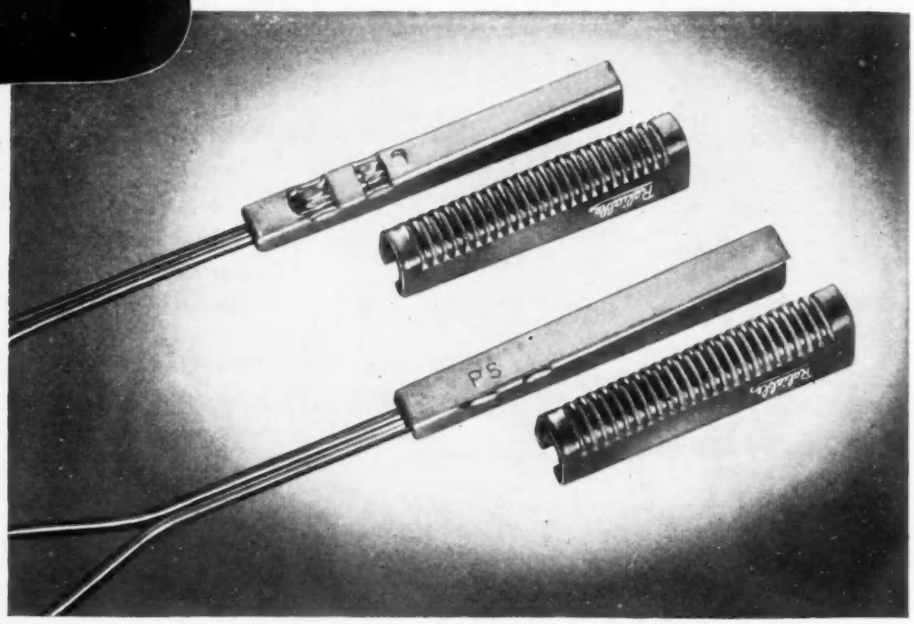
Switch replacement, if ever necessary, can be made in split seconds, without stopping the unit and without soldering.



Cams are case-hardened steel, custom-cut to provide specific intervals for each interruption. Note, at the left, the planetary gears which allow reduction to 2-minute cycle on the SAME main shaft as the higher speeds—a saving in both space and cost. The shaft torque is so low that motor load is close to zero. Life tests on the planetary gears were run for 9 months at a 50-to-1 speed ratio—the equivalent of 37½ years' actual service—with only intermittent lubrication and negligible wear.

The motor is a Bodine speed-reducer motor, with built-in reduction gearing. It can be removed and replaced in 30 seconds! Supplied for 110-volt Alternating Current or for 48-volt Direct Current.

The Right Clamp for *Your* Drop Wire



Reliable DROP WIRE CLAMPS

New experiments in drop wire economy bring a wider selection of sizes and styles than have ever been available. You can use #17 bronze or #18 copperweld, parallel reinforced, parallel non-reinforced, twisted pair reinforced, twisted pair non-reinforced, or the new twin construction.

One clamp will not hold all present drop wires perfectly and economically.

To cooperate during this period of development, Reliable now offers:

TYPE "P"—for #17 reinforced parallel (The Type "P" Clamp holds all other drop wires well at moderate tensions, but tends to concentrate its pressure on a small area under heavy loads.)

TYPE "PS"—for other #17 constructions and all #18. (The "PS" Drop Wire Clamp—priced only slightly above the Type "P"—is built to avoid any concentration of strains on wires which are smaller, and which may be structurally weaker, than #17 parallel reinforced. Even under breaking loads the "PS" Clamp supports the drop without damage.)

WRITE FOR FULL INFORMATION

Reliable
ELECTRIC COMPANY
3145 CARROLL AVENUE • CHICAGO 12, ILLINOIS

OVER 40 YEARS' *Service* TO THE TELEPHONE INDUSTRY

THE WHITNEY BLAKE BULLETIN

DROP WIRE ECONOMICS

In preceding issues of The Whitney Blake Bulletin we have told you the story behind the quality of Whitney Blake drop wire. We have tried to point out the background and development of this fine product in more or less detail. Factually the end result of all this research and effort to produce a long lasting drop wire is not only better performance but **greater economy** for the telephone operating company.

HOW TELEPRENE SAVES

Drop wire is not expensive. Labor, overhead and miscellaneous materials account for 60 to 80 per cent of the total cost of installation, according to a recent cross-section study of figures. If you were able to obtain drop wire for nothing, you would reduce the total cost of installation only 20 to 40 per cent, depending on direct labor and overhead rates. It follows that the price you pay for the drop wire itself has little bearing on the overall question of economical drop wire installation. It is **maintenance** that is costly. Therefore, if the drop wire you obtained at **no cost** needed as little as 20 per cent more replacement than the most expensive drop wire, that free wire would be more costly because of added maintenance costs.

Even if you had to pay extra for Whitney Blake's drop wire, it would save you dollars in the end, because Teleprene is made and known to have characteristics which should give it longer life than any other drop wire manufactured anywhere.

WHY TELEPRENE LASTS

Drop wire ordinarily fails because the outer coverings are not adequate to preserve the insulation or because of failure of adhesion between conductor and insulation. In developing Teleprene, these were the two problems that had to be overcome. After a great deal of research, we were able to produce compounds of neoprene, which possess a remarkable degree of weather and abrasion resistance. Lack of adhesion was overcome with the development of Whitney Blake's exclusive Teleplate process. It is as yet too early to determine just how long Teleprene will last. Teleprene always carries a colored year marker thread which will make it easy to determine its exact age in years to come. A failure of this new drop wire has not yet been reported and there is every indication that ten or fifteen years may pass before a definite prediction of Teleprene's life-expectancy can be made.

FIGURE THIS OUT FOR YOURSELF

We suggest that you fill in the following figures to get a clearer picture of what your savings could be if you used Teleprene:

Average Length of Drop Wire Installed .....

Cost of Drop Wire .....

Cost of Other Materials .....

Direct Labor Cost .....

Overhead .....

Total Cost of Drop Wire Installed .....

Per Cent of Cost Drop Wire vs Total .....

Reprints of this advertisement are available on request.

THE WHITNEY BLAKE CO., BOX K, HAMDEN, CONN.

IMPROVED C

SNUB LASHING WIRE OVER STRAND AND PASS WIRE THROUGH EYE OF SUPPORT WHEN REQUIRED.
ONE TURN AROUND CABLE ONLY
TWO TURNS AROUND BOTH CABLE AND STRAND
DOUBLE END OF STRAP OVER AND BACK OF BUCKLE
NOTE: IF LASHED CABLE SUPPORT IS NOT AVAILABLE, MAKE ONE FROM AERIAL CABLE SUPPORT BY TAKING OUT WIRE HANGER.

Fig. 1—Attaching lashed cable support.

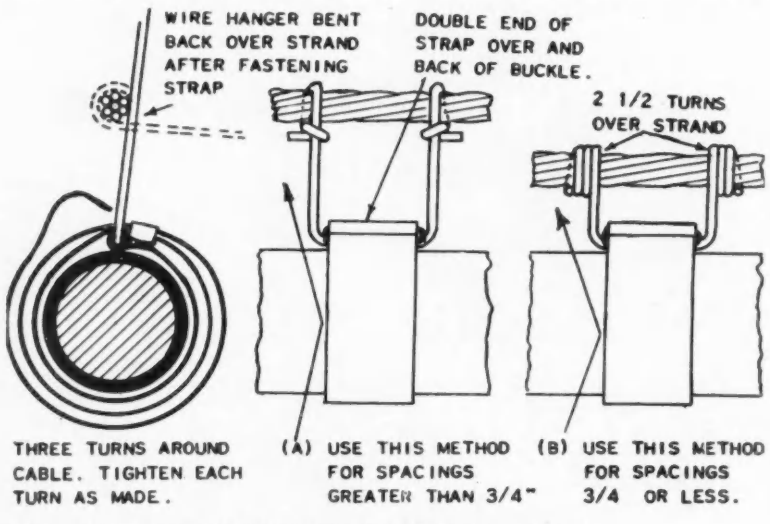

WIRE HANGER BENT BACK OVER STRAND AFTER FASTENING STRAP
DOUBLE END OF STRAP OVER AND BACK OF BUCKLE.
2 1/2 TURNS OVER STRAND
THREE TURNS AROUND CABLE. TIGHTEN EACH TURN AS MADE.
(A) USE THIS METHOD FOR SPACINGS GREATER THAN 3/4"
(B) USE THIS METHOD FOR SPACINGS 3/4 OR LESS.
NOTE: USE LASHED CABLE SUPPORT WITH LEAD SPACER WHEN THERE IS INSUFFICIENT SPACE BETWEEN CABLE AND STRAND FOR METHOD (B).

Fig. 2—Two methods of attaching aerial cable support.

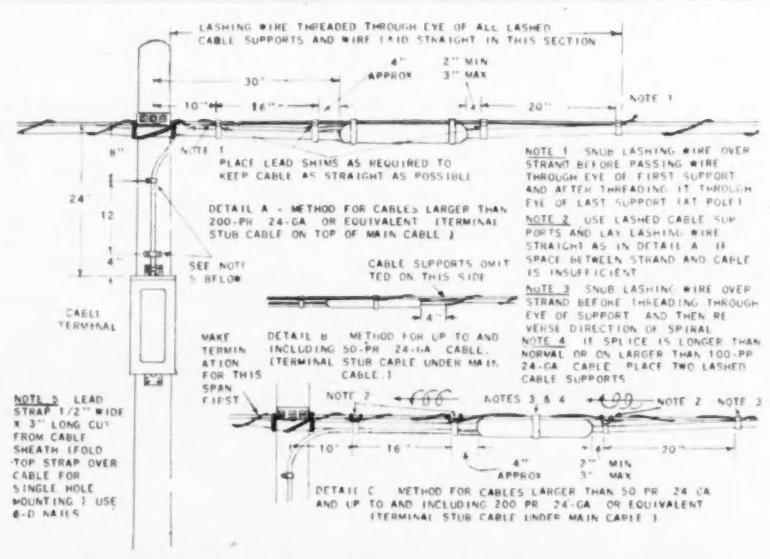

LASHING WIRE THREADED THROUGH EYE OF ALL LASHED CABLE SUPPORTS AND WIRE LAID STRAIGHT IN THIS SECTION
DETAIL A - METHOD FOR CABLES LARGER THAN 200-PR 24-GA OR EQUIVALENT (TERMINAL STUB CABLE ON TOP OF MAIN CABLE.)
DETAIL B METHOD FOR UP TO AND INCLUDING 50-PR 24-GA CABLE. (TERMINAL STUB CABLE UNDER MAIN CABLE.)
DETAIL C METHOD FOR CABLES LARGER THAN 50 PR 24 GA AND UP TO AND INCLUDING 200 PR 24-GA OR EQUIVALENT (TERMINAL STUB CABLE UNDER MAIN CABLE.)
NOTE 1 SNUB LASHING WIRE OVER STRAND BEFORE PASSING WIRE THROUGH EYE OF FIRST SUPPORT AND AFTER THREADING IT THROUGH EYE OF LAST SUPPORT (AT POLE.)
NOTE 2 USE LASHED CABLE SUPPORTS AND LAY LASHING WIRE STRAIGHT AS IN DETAIL A IF SPACE BETWEEN STRAND AND CABLE IS INSUFFICIENT.
NOTE 3 SNUB LASHING WIRE OVER STRAND BEFORE THREADING THROUGH EYE OF SUPPORT AND THEN REVERSE DIRECTION OF SPIRAL.
NOTE 4 IF SPLICE IS LONGER THAN NORMAL OR ON LARGER THAN 100-PR 24-GA CABLE PLACE TWO LASHED CABLE SUPPORTS.
NOTE 5 LEAD STRAP 1/2" WIDE X 3" LONG CUT FROM CABLE SHEATH (FOLD TOP STRAP OVER CABLE FOR SINGLE HOLE MOUNTING.) USE 6-D NAILS.

Fig. 3—Methods of supporting cable at terminal pole splices.

THE METHOD whereby lead-covered cable is lashed to its supporting strand by spiraling wire around the cable and strand has resulted in prolonging the life of aerial cable. It has saved considerable sums that might otherwise have been expended in maintaining or replacing the cable, particularly when the proper procedure has been followed in handling and supporting the cable.

Since methods of spinning cable have been adequately covered in bulletins and manuals available to all operating companies, this article will be limited to a discussion of proper strand, cable, and spinning wire tensions, and of methods of supporting the cable at poles and cable splices, protecting the cable at irregularities in the supporting strand, and terminating and splicing the lashing wire.

Tensions of Lashing Wire, Supporting Strand and Cable

THE LASHING of the cable to the supporting strand rather than carrying it in rings attached to the strand has the important effect of preventing the creeping of the cable along the strand as the result of vibrations and the expansion and contraction of the cable with seasonal changes in air temperature. This longitudinal movement of the cable sets up bending stresses which are harmless if they are uniformly spread out over the entire cable. If these stresses, however, are concentrated at any one point, the cable sheath will be damaged in this location.

In order to securely lash the cable to the strand, the spinning wire must have the right amount of tension specified by the manufacturer of the spinning machine. Moreover, this tension must be maintained throughout the entire length of the cable. Since a heavier tension may cause cutting of the cable sheath, care should be taken in making up the wire terminations at poles not to introduce slack at this point.

Whenever spinning wire is to be cut or untied, the wire must be first clamped to the strand with a suitable clamping tool. This will prevent the possibility of releasing the tension of the wire around the cable.

The tension of the supporting strand is another factor to be watched. It is a known fact that cable tends to

Cable Lashing Methods

by

John S. Reed

NEWEST METHODS of supporting cable at poles and cable splices, protecting cable at irregularities in the supporting strand, and terminating and splicing the lashing wire.

stretch to a greater extent than its supporting strand when the temperature rises. The greater the strand tension, the larger is the difference in the amount of stretch. If the strand is placed with greater tension than allowed by standard cable construction, bows will form in the cable, causing the sheath to crack at these points.

When placing new cable, it is advisable to make sure that the supporting strand has been adjusted to the correct tension. The proper tension for lashed cable construction is 1,100 pounds for 6,000-pound strand, 3,500 pounds for 10,000-pound strand, or 5,700 pounds for 16,000-pound strand, all at 60 degrees F. A strand dynamometer should be used to measure the tension.

In the case of existing cable being spun, the sag of the present cable should be measured and compared with the table of standard sags for the sizes of the cable and strand involved. This sag should not exceed the normal sag by 75 percent, nor should it be less than this normal value.

When installing new cable or preparing existing cable for spinning to the strand, care should be taken to place the cable under tension only as required by the prevailing temperature at this time and to keep the cable straight. If the cable is too tight with respect to the strand, the sheath will stretch at weak points such as wiped joints. On the other hand, cable that is too tight will form bows.

The present spinning practice is to place the cable with only sufficient tension to make the cable lie straight at temperatures of 60 degrees F or over. At lower temperatures, a certain amount of tension should be applied in accordance with the table listing amounts of cable stretch at temperatures below 60 degrees F given in cable spinning manuals. If existing cable is being spun and it is found that slack tends to accumulate in front of the spinner, the cable should be again pulled up to straighten it and to maintain the proper amount of stretch required. To avoid the chance of damaging the cable, slack blocks, rather than a mechanical hoist should be employed to apply the tension. In addition, not more than three spans of existing cable should be pulled up at one time.

Use of Cable Supports

IN ORDER to avoid localized points of strain, cable should be placed as straight as possible with no abrupt dips or rises. If dips or rises occur and they cannot be avoided, they should be made as gradual in curvature as possible.

If extensive gaps occur between the cable and the strand as at cable splices, the lashing wire should not be spiraled around the cable and strand, but should be kept off the cable within this section. The cable should be supported on the strand by means of zinc straps and strap hangers, termed lashed cable supports and aerial cable supports, respectively. *Figures* 1 *and* 2 show how these two types of supports are employed and Table I gives the proper sizes of supports for the sizes of cable or sleeve to be carried.

At dips and rises and at bends due to turns in the cable lead, lashed cable supports should be utilized to fasten the cable to the strand at the points where the cable leaves the strand and where it resumes contact with the strand. At points where the cable is separated from the strand, aerial cable supports should be used to maintain the separation and properly support the cable. Lashed cable supports with lead shims may be employed if the space between the cable and the strand is insufficient for aerial cable supports.

Since cable splices are quite heavy and rigid in comparison to the smaller diameter cable adjoining the splice, spiraling the lashing wire around the splice will not securely hold the splice in position unless the splice is very small. In this case, a lashed cable support should be placed to carry the splice and the cable near the splice ends should be secured with aerial cable supports. If the cable is 200-pair, 24 gauge or larger, two lashed cable supports should be used on the splice, near the ends. The supporting methods are illustrated in the three details in *Figures* 3 *and* 4. It should be noted that the lashing wire is kept off the cable by spiraling it around the strand alone, or by laying it straight from support to support as indicated. If the splice pulls away from the strand, lead shims may be placed between the strand and the splice at the supports, or aerial cable supports many be substituted in order to hang the splice with the minimum of strain on the

(*Please turn to page* 66)

Aerial or Lashed Support Code No.	Length of Zinc Strap	MAXIMUM Diameter of Cable or Sleeve: Lashed Support on: Cable*	Lashed Support on: Sleeve	Aerial Support on: Cable*	Aerial Support on: Sleeve	MAXIMUM Circumference over Sleeve or Combination of Cables: Over Sleeve and Strand-Lashed Support	Over Combination of Cables-Aerial Support
891	10"	3/4"	3/4"	3/4"	3/4"	3 3/8"	2 5/16"
892	16"	1 5/16"	1 1/4"	1 1/16"	1 1/4"	5 3/8"	3 5/8"
893	22"	1 7/8"	1 3/4"	2"	2"	7 3/8"	6 5/16"
894	28"	2 3/8"	2 1/4"	2 5/8"	2 1/2"	9 3/8"	8 5/16"
895	34"	2 5/8"	2 1/2"	3 1/8"	3"	11 3/8"	10"
896	50"	—	4 1/2"	—	5"	17"	15"
897	64"	—	6"	—	6 1/2"	21 3/8"	20 1/2"

*If a lead sheath is used with the support, add 3/16" to diameter of cable to allow for thickness of sheath.

Table I—Sizes of Aerial or lashed Cable Supports for Corresponding Sizes of Cable to be Carried. (Adapted from Diamond Expansion Bolt Co. Data.)

WASHINGTON BUREAU

SENATE PASSAGE of Minimum Wage legislation heralds start of hard fought battle over coverage provisions despite fact that neither house complied with President Truman's request to broaden coverage of FLSA.

ONE OF THE most hard-fought battles of a trying and controverted session of Congress is slated to have begun by the time this magazine reaches its subscribers. The fight will be behind closed doors, and, for some Southern Congressmen, it will be virtually a fight for political life.

More or less caught in the middle will be the Independent telephone industry, which, through a rather surprising action of the Senate in passage of the upper chamber's version of new minimum wage legislation, was given a boost in its exemption for operators under the Fair Labor Standards Act. The Senate approved a 750-station exemption, rather than the current 500-station standard.

Both the House and Senate are agreed that the new minimum wage should be 75 cents an hour. The fight will be over coverage provisions, despite the fact that neither house complied with President Truman's request to broaden the coverage of the FLSA legislation.

The House, in approving a bill which was satisfactory to most Southern Congressmen despite the 75-cent wage floor, reduced coverage of the present legislation by about 1.5 million workers. Most of them are in industries concentrated in the South, and sponsors of the coverage changes insisted that continued coverage—or leaving the door open to the courts and the Wage-Hour Administrator to decide who is covered—would be disastrous for those industries.

The Senate, however, left present coverage almost intact, although it did tighten the definition of retail establishments which come under the minimum wage law.

When the conference gets into full swing, thus, the real battle will be over coverage. It is certain to be a tough fight with a great many attempts at compromise, and with House conferees probably fighting a vigorous action to retain the coverage changes approved by their colleagues.

That may not be so bad for Independent telephone companies, because about the only expemption added by the Senate which is not in the House bill is the change in the telephone exemption. Thus the conferees, without losing anything for the Southerners, could offer to accept the Senate telephone change as one of the parts of the Senate-approved measure to stand in the final version.

Senate approval of a 750-station telephone exemption came after considerable mention of the subject in early debate, with Senator Hugh Butler (R., Nebr.), who sponsored the amendment, and Senator Robert Taft (R., Ohio), ranking Republican in labor matters, pointing out that a 500-station exchange 10 years ago would be a 750-station exchange now, with the growth in telephone stations.

Senator Claude Pepper (D., Fla.), chairman of the subcommittee which considered wage-hour matters and floor manager of the bill, appeared to accept this view.

As a result, the amendment went into the bill, in a peculiar parliamentary situation, without a formal vote. Senators Pepper and Taft merely commented that they were willing to "take it into conference," and the change became a part of the Senate-approved measure without further action.

The Senate action climaxed a long fight by the Independent industry and the U. S. Independent Telephone Association to raise the present exemption, which they contend is now too low as a practical matter. The House voted down a similar amendment, after a plea by Rep. Helen Gahagan Douglas (D., Calif.) that a 750-station proviso "would uncover thousands of women."

Virtually enacted into law, as a result of approval by both the House and Senate, was an exemption sponsored by the Western Union Telegraph Co. It provides that telegraph company agents, with telegraph revenues of $500 or less monthly, will not be brought into FLSA coverage if they are otherwise exempt. There had been previous conflicting court decisions on this subject, with one court insisting that telegraph agency operations should be subject to the FLSA.

Western Union officials pointed out that as a result of the confusion they were having extreme difficulty in obtaining qualified agents in small communities, thereby imperiling telegraph service in the smaller population areas where it is not feasible for Western Union to open its own offices.

Protecting the Taxpayer

TAXES IN THE United States now consume about 30% of our total national income. This means that our people work about 15 weeks out of 52 for the government. The percentage of all taxes to national income has more than doubled in the last 20 years. This trend, sooner or later, will take its tragic toll of our American standard of living. If the government continues to take each year in taxes more and more of our dwindling earnings, there will be less and less available for investment to maintain and expand our economy. The hope for a free America is an ever-expanding economy based upon private enterprise.

The time has come to cut governmental budgets, to pay governmental debts and thereby to pave the way for ultimate tax reduction. There are few spokesmen for the taxpayers. Somehow, in our wilderness of taxes, their voices must be heard.—FRED J. STAUFFER'S, Executive Digest.

Rural Telephone Legislation

ANNOUNCED moves by the Senate Democratic leadership to try to find legislative "shortcuts" in an effort to speed the end of the current long session of Congress, and indications that the Senate Agriculture Committee will be concentrating almost exclusively on farm price supports in the immediate future, lend weight to the hope that the Senate will not act on farm telephone legislation this year.

Farm price prop legislation was included in the "must" list of Senate Majority Leader Lucas after a Democratic Policy Committee meeting, but the rural telephone bill was not. Meanwhile, the Agriculture Committee, after a conference with President Truman, reported out a revised farm price support measure (not the Brannan Plan) which is bound to claim the major attention of committee members.

There is no doubt that the members

U REPORTS

by Roland Davies and Fred Henck

"Persons who urge greater dependance upon the Federal Treasury are more dangerous to our form of government than any external threat."
—GEN. "IKE" EISENHOWER.

of Congress are anxious to get home, not for brief legislative vacations, but for the rest of the year. Senator Lucas' "must" list, whether all the bills included are acted on or not, is certain to keep the Senators in Washington longer than they'd like to stay. There doubtless will be little enthusiasm for adding to it.

The move to try to fix an end to the session probably sounds the death knell for what little hope remained that there might be excise tax changes this year. Prospects, of course, are getting fainter almost by the day, and now appear to be just about non-existent.

Harold Bozell Heads NSRB Task Group

HAROLD V. BOZELL, president of the General Telephone Corp., has been designated chairman of a Task Group of the National Security Resources Board to study the requirements of the nation's telegraph and telephone communications industry in event of an emergency. Task Group, on which will serve seven executives of the Bell System and Independent operating and manufacturing branches and Western Union, was formed out of the membership of the telephone and telegraph communications industry advisory committee to the NSRB.

Other members of Task Group are: F. W. Bierwirth, v. p., Western Electric Co. in charge of its telephone manufacturing division; T. S. Gary, of the Automatic Electric Sales Corp.; C. D. Manning of the Kellogg Switchboard & Supply Co.; vice president Fred E. Norris of the General Telephone Corp.; Chief Engineer Harold S. Osborne of the American Telephone & Telegraph Co., and E. R. Wheeler, general purchasing agent of the Western Union Telegraph Co. The special Task Group will report to NSRB Assistant Director of Production Leighton Peebles.

Meanwhile, the membership of the Munitions Board's Communications and Electronics Equipment Committee, which was reestablished Aug. 16, has not yet been completed by the three military departments—the Army Signal Corps, Navy Bureau of Ships, and Directorate of Air Force Communications. It is understood that the nominees have been transmitted, but are awaiting final approval by the Munitions Board.

Among the assigned tasks of the newly reestablished Communications and Electronics Equipment Committee are the coordination of current peacetime procurement programs with plans for mobilization in an emergency; development of combined requirements for the three Military Departments for end items, components, parts and materials evaluation of the impact of military programs on the electronics industry, and an indication of the areas in which there may be shortages in the industry of resources including manpower, material production and test equipment and plant capacity.

Another of its important objectives will be the attainment of maximum standardization of end items, components and parts.

The NSRB telephone-telegraph communications industry task group, according to the announcement of Presidential Assistant Steelman, "will look into the needs, under war conditions, of the domestic communications operating industry with special emphasis on the impact on manufacturing capacity. It also will stress needs for raw materials and reserve stocks of manufactured items to provide the service necessary in an emergency."—THE END.

Public Relations Should Stop Trying to Define Itself

THE LACK OF understanding of what public relations is and does is in large measure due to poor public relations on the part of public relations' practitioners and supposedly-qualified critics. I have just finished reviewing the past year's crop of 987 different definitions of "public relations." Isn't it about time we abandoned the search for the one best definition? It isn't very important and it is doing more harm than good for the profession of public relations —a profession that has far better things to say about itself.

Public relations defies definition. It is all the things its many definitions are trying to say. Better to publicize the good record public relations has made. Its achievements are worth talking about. And the more people know about something worthwhile, the better qualified they are to form correct opinions and react favorably to the truth.—ADVERTISING AGENCY.

Saving material, time money!

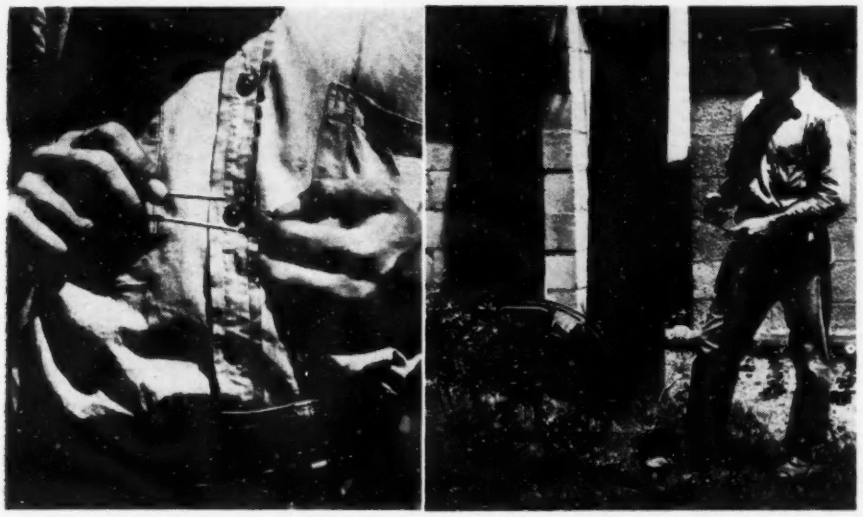
NO MATTER how long the present period of economic inflation lasts, it is a condition that is impossible to become reconciled to. Living costs are the common topic of conversation in this day and age, and the *big problem is how to get the most out of your money and still maintain accustomed standards.*

So it is with the telephone industry, too. The industry and its employes have always done as economical and good a job as possible, but in this era of high costs it is imperative that all employes continue to keep an eagle eye out for ways of saving materials and time in order to maintain the industry's high service standards.

An amazing amount of expensive material is used by the plant department and these men are experts at doing a good job with the minimum amount of waste. Through the courtesy of J. W. Curtis, editor of the OHIO BELL MAGAZINE, we show on this page and the opposite page a few posed photographs illustrating how economy can be accomplished and how time and money can be lost on the job.

A number of items that look like they aren't worth saving are often thrown in the scrap bins. Above, Ohio Bell employees salvage usable wire from the bin, and demonstrate that bent anchor guy rods can be straightened and used.

LEFT: Ohio Bell lineman proves screwdrivers were never meant to be used as chisels and shows how handle can be split by this misuse. CENTER: Making a careless estimate in the amount of drop wire needed to connect with terminal results in waste. The installer shows how several feet of drop could be wasted if he cut where he indicates. RIGHT: The installer is using a 5-inch diagonal on a job that requires the heavier 7-inch. Result will be a damaged diagonal.



It takes only a minute to save that odd length of drop wire and use it on the next job. All repairmen and installers when they come to the end of the reel of drop wire now find that the best way to dispose of the odd length is to splice it to the new reel. Above—the wires of the short piece of drop are being inserted into sleeves of the new coil of drop wire. These are then crimped together and the splice then covered with friction tape as installer is shown doing at right.

Lineman illustrates a common way in which cable is sometimes wasted. The new top cable should have been pulled in farther and spliced into the cable beneath it. The job will now require an extra piece of cable and two splices instead of one.

This is nothing new to installers but it always a good thing to remember. Whenever an instrument is recovered and is to be taken back to the garage it should be placed in a sack before it is placed in the truck. This prevents damage to the telephone while it is bumping along in the truck. Telephones not sacked frequently reach the garage in worse shape than when they were taken out of the subscriber's home.

In the stockroom, good housekeeping is an important method of conserving materials.

Good housekeeping is plant department watchword. At left is the old-type cable splicers' truck with everything but the kitchen sink piled on top. At right is the new truck which provides a place for everything inside the truck.

Installation foreman checks an installers' truck to make sure it is carrying the standard load. The good housekeeping in the truck indicates that the installer doesn't carry materials that are not needed.

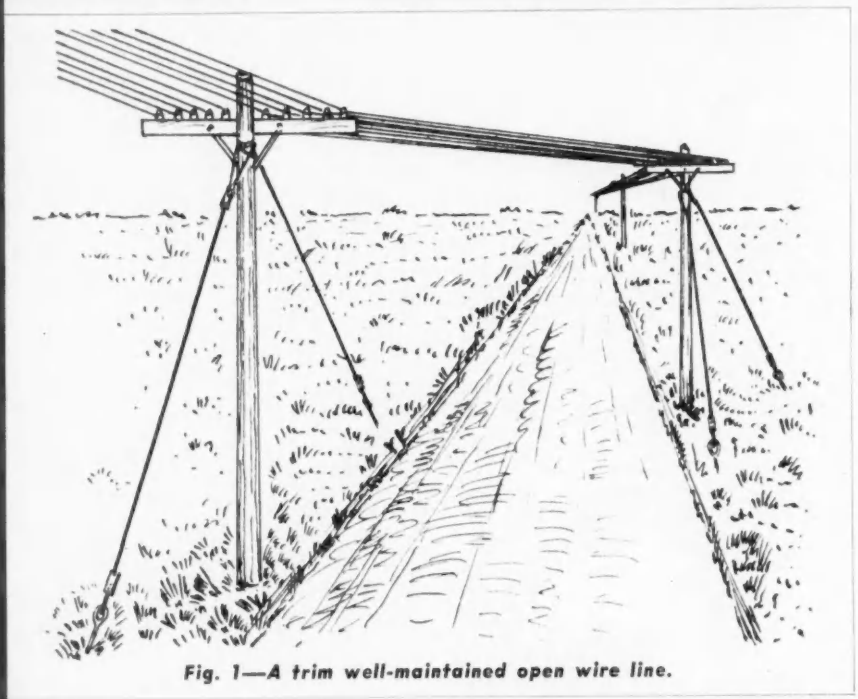


Fig. 1—A trim well-maintained open wire line.

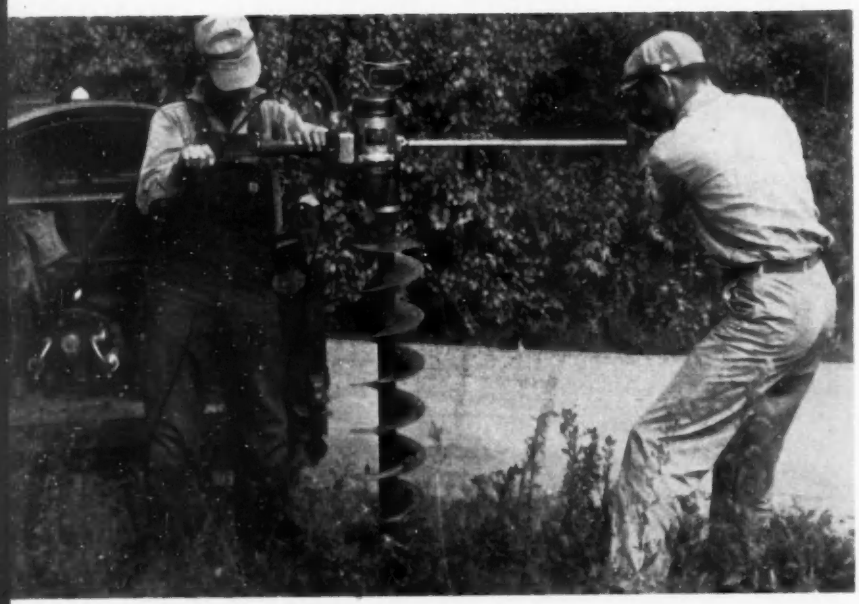


Fig. 2—Motorized tools economically speed-up operations.

BEFORE The

PEOPLE COME and people go but the seasons go on forever. Telephone managers, like farmers, must take into account the changes in the seasons. With Fall just around the corner, consideration must be given to essential construction projects which must be completed before cold weather and to the repair of weak sections of outside plant that might not be able to withstand the ravages of winter.

These notes discuss various aspects of outside plant construction and maintenance work.

Fall and early winter is, in most sections of the country, an ideal time for construction and maintenance work on outside plant. The cool even weather, typical of most sections of the country, speeds up operations and assures maximum performance at minimum cost. Time studies have shown that construction crews operate at maximum efficiency during this period of the year as contrasted to spring, summer or late winter operations.

It is still not too late to undertake substantially large projects provided plans are drawn, materials ordered promptly, and the work gotten under way within the next few weeks. Such projects as strengthening weak sections of pole line, stringing new wire, relocation of leads on new and improved routes, inspection and repair of cable plants, etc., should be put on the "list of things to do." (*See Figure* 1)

Modern Tools And Techniques

CONSTRUCTION and maintenance should take full advantage of new construction techniques and the use of modern tools and equipment. The greatly improved line material and tool situation now make it possible to have exactly the right tools and materials for every job.

Typical equipment units which will definitely earn their own way are: (1) Motorized hole digging units; (2) electric drills and saws; (3) portable truck mounted aerial ladders; gas type torches and furnaces, and (5) torqueless brush and tree clearing saws.

Time studies and a careful analysis of costs have definitely shown that substantial savings are possible with motorized hole digging units. An American Association of Railroads

COLD WEATHER Begins

By B. C. Burden

WITH FALL just around the corner, consideration must be given to essential construction projects which must be completed before cold weather starts and to the repair of weak sections of the outside plant.

investigation showed savings of over $7,000 on one large project involving the placing of several thousand poles. On another project involving 9,000 poles savings of about $1.00 per pole were realized.

Where large heavy duty construction trucks are used, the new type "derrick suspended" digger (*See Figure* 2) would seem to have a real field of use. But for use with smaller trucks, the portable electric earth auger of the Kamo type has outstanding merit. Its primary advantage is, of course, its portability which permits its use in virtually any location regardless of ditches, trees, etc.

Some companies are making use of standard farm tractors with power take-off operated and hydraulic lift. Flat bed trailers are used to transport the augers tractor to the construction project.

A recently announced new type of saw should find real application where extensive amounts of brush and undergrowth is to be removed, and for clearing right-of-way in heavily wooded areas. Known as the *Jacob's Wonder Saw* (*See Fig.* 3), it differs from the usual circular saws in that it consists of two large blades close together but which turn in opposite directions. This reduces the circular twisting torque or "grabbing action" typical of the single blade. It is possible to cut small and large brush and heavy undergrowth which cannot ordinarily be handled with the single blade or by chain saws.

By the use of such modern equipment as truck mounted aerial ladders, brush cutting saws and motor driven hole drilling equipment, it is often feasible to operate with reduced forces, yet provide the same or better quality of workmanship. It is evident that *this saving in manpower will soon retire the cost of the equipment even though the initial cost may seem high.*

Aerial ladders are finding extensive use in connection with cable plant maintenance. They are particularly useful at this season of the year when cable plant must be given a "once over lightly" inspection and repair. These ladders are also "proving-in" on rural plants for cutting out bad joints in the span. Companies which have had no experience with such equipment as electric augers, aerial ladders, and other similar tools, should acquire first-hand information by visiting nearby companies that are using these units.

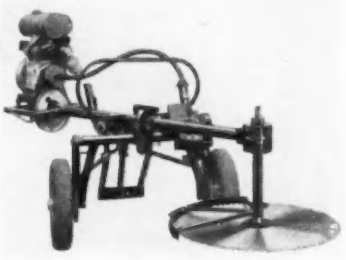


Fig. 3—The Jacob Wonder saw has two blades which turn in opposite directions.

Gas Torch And Furnaces Save Time

THE USE OF compressed gas torches, furnaces, and soldering irons is on the increase which indicates a better appreciation of the low cost of tools and the high cost of labor. Acetylene gas is an old product and many years ago every automobile carried a tank of acetylene for its headlights.

Compressed gas appears to offer the advantage of convenience, speed, and safety as contrasted to gasoline torches and furnaces which require time for generation and oftentimes, particularly in cold windy weather, are difficult to start. (*See Figure* 4.)

Acetylene gas is available in both small and medium size tanks. The medium size B tank has a capacity of 40 cubic feet (cost for gas about $3.50) and is used for operation of furnaces and other types of work using a substantial amount of gas. The smaller MC (10 cubic feet) tank (cost about $1.75 for gas) is suitable for soldering line wire joints, particularly when the torch is carried up poles.

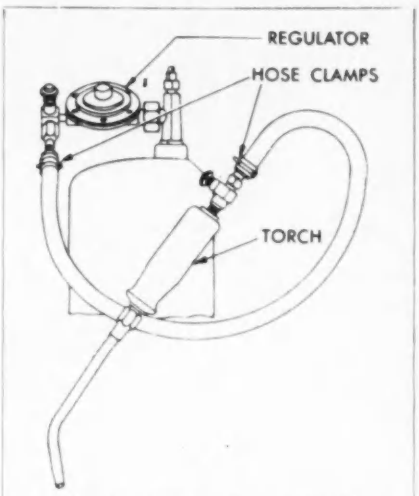


Fig. 4—Gas torches save time and money.

Cable splicers find many uses for gas torches and furnaces. The higher cost of gas is offset by its greater convenience and safety.

The Fall Inspection

THERE ARE several theories with respect to the best method of maintaining outside telephone plants. One school believes the proper way is to build up a good plant, then allow it to wear itself out. Only such repairs as are required to correct reported troubles are made. After the plant reaches a bad state of repair, it is torn down and rebuilt.

The second school of thought maintains a plant should be kept as near to 100 percent condition as possible. The writer is inclined to go along with a modified form of this latter trend in thinking, i.e., keep the plant up in good shape, but do not overmaintain it.

A fall inspection of plant in preparation for winter storms will reveal weak spots which may require replacement or reinforcement before winter sets in. The strengthening of these weak spots tends to "tone-up" the entire plant and minimizes service interruptions which usually occur when the weather is at its worst.

These "horseback" inspections are sometimes criticized as being inade-

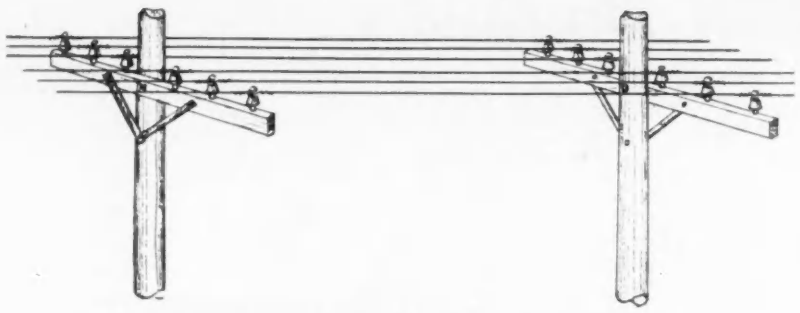


Fig. 5—Bolster up weak lines for winter storms.

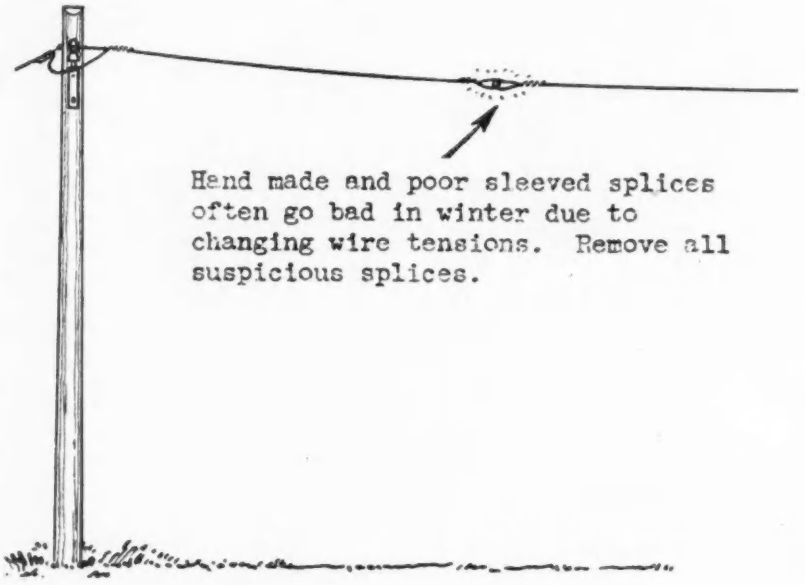


Fig. 6—Check lines for bad splices.

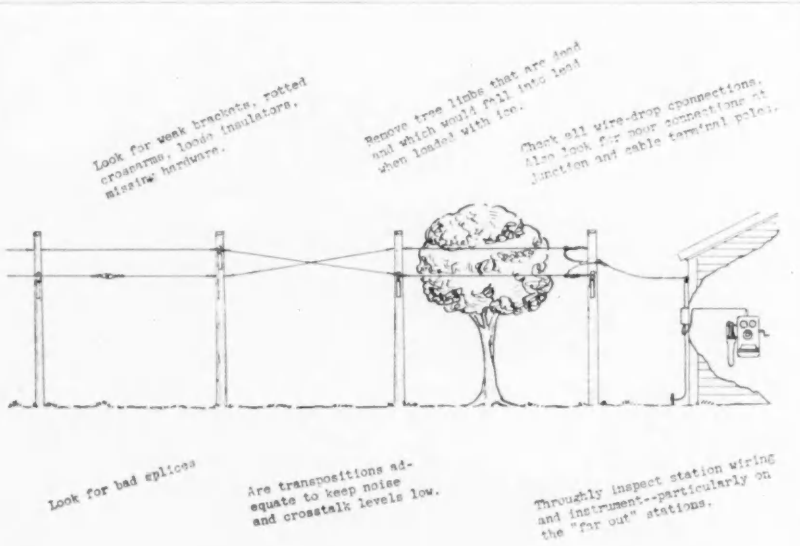

Look for weak brackets, rotted crossarms, loose insulators, missing hardware.
Remove tree limbs that are dead and which would fall into lead when loaded with ice.
Check all wire-drop connections. Also look for poor connections at junction and cable terminal poles.
Look for bad splices
Are transpositions adequate to keep noise and crosstalk levels low.
Thoroughly inspect station wiring and instrument--particularly on the "far out" stations.

Fig. 7—The overall inspections should reveal the weak spots.

quate to detect the true condition of the plant. It is true the condition of standing poles cannot be determined with accuracy by simply riding along the pole line in a car and jotting down notes. However, anyone familiar with a given plant generally knows when pole replacements are required along given stretches of the lead, even though the poles are not given pike tests to determine their condition.

It is usually considered uneconomical to reset old poles, but resetting is justified when merely strengthening a lead which is to be rebuilt at some later time. A pole line which is in bad condition can often be substantially strengthened by simply resetting every third or fourth pole, particularly on sections of lead severely exposed to the prevailing storm winds. Such strengthening may help to prevent a complete loss during a bad storm. This "spot reinforcement," though it may have a short term life, does offer relatively cheap insurance against serious "outages" when storms hit. (*See Figure* 5.)

In preparing a plant for winter, even stub reinforcement of important broken or weak terminal poles is often justified. Stubs can be set in relatively short time as compared to complete replacement of a heavily loaded pole and will strengthen the pole sufficiently to carry it through to the time that the lead is to be rebuilt. Pole stubbing should make full use of standard strapping and reinforcement pipes. These can be applied more rapidly than the wire wrapping type and will give much stronger construction.

Line Wire Joints

SUB-ZERO winter weather always brings with it an epidemic of poor transmission complaints on rural lines. These result largely because of high resistance line wire hand-splices, taps at junction poles, and loose drop wire-line wire connections. A poor connection may often go through the summer without causing trouble, but the first cold snap makes it go "high". This condition results primarily from the changing mechanical tensions in the wire due to the cold. These changes may cause a slight shifting in the contact areas of the joints resulting in resistance "build-ups" due to oxidized surfaces. This trouble usually occurs at a time when sub-zero weather prevails and when life over a hot register is much more attractive to a trouble man than a day in the open. Climbing poles

(*Please turn to page* 68)

Use It Right For Safety's Sake

by

Richard Allen

Wear Safety Glasses When Using A Hammer—Avoid Injury
DO
Whenever possible always wear safety goggles while using a hammer. This includes driving nails. A flying nail or other flying material can cause the loss of an eye.
DON'T
DON'T attempt to drill holes in stone or concrete without wearing goggles.

FAULTS PRODUCING hand tool injuries are so closely identified with working habits that half-way precautionary measures are not successful. All tools must be made safe and maintained in this condition and proper methods of use must be followed.

HAND-TOOL INJURIES are relatively numerous in practically all branches of the telephone industry. They result chiefly from the use of tools that are defective or not suited to the immediate purpose and from unsafe methods of use. Methods of correction are simple and can be carried out by any foreman or other supervisor.

Tool defects are common. Probably the chief reason for this is that they seem of little consequence to persons who are not safety-minded. Their real importance is shown by the fact that safety-minded employers give hand tool safety careful and continuous attention. Experience proves that hand tool injuries, like all others, can practically be eliminated. The faults that produce most tool injuries are so identified with the working habits of the men that halfway measures are never successful—all tools must be made safe and maintained in this condition, and proper methods of use must be followed.

The following list describes specific defects of the more common tools that are known as the chief causes of hand tool injuries:

(A) *Chisels, punches, etc.*—Mushroomed or chipped heads, chipped or dull edges or points, overtempered heads and points, too short for hand safety.

(B) *Drills, bits, augers, reamers, etc.*—Mushroomed or chipped heads, over-tempered heads or points.

(C) *Electric power tools*—Worn, deteriorated or inadequate insulation, split or chipped plugs, worn or bent plug terminals, defective switch, vibration, sparking, wrong drill or other tool, projections on chuck, lack of guard (as portable grinder), worn or insecure chuck (or other attachment device).

(D) *Files*—Handles missing, chipped ends, teeth worn smooth or filled.

(E) *Hammers*—Loose, split, or rough handles, chipped or battered heads, sprung or broken claws (carpenter hammer) poorly secured handles (nails in place of wedge).

(F) *Hooks*—Dull points, handles improperly shaped, leaving finger-pinching hazards.

(G) *Knives*—Lack of finger guards, dull or nicked edges, loose or split handles.

(H) *Lifting jacks*—Worn threads; lacking, worn, ill-fitting or sprung safety pawls; inadequate base; sprung, ill-fitting or inadequate operating handle.

(I) *Pick axe*—Loose or split handles, dull or over-tempered points.

(J) *Saws*—Improper set, sprung blades, loose or splintered handles, dull.

(K) *Screw drivers*—Split or battered handles, dull or bent blade, bent shank.

(L) *Shovels*—Split, rough, or loose handles.

(M) *Tongs and pliers*—Poorly shaped, worn or chipped jaws, handles improperly shaped, leaving finger-pinching hazard.

(N) *Wrenches (pipe, monkey, end, etc.)*—Worn or sprung jaws, battered heads, rough or sprung handles, broken springs, worn mechanism.

Among the commonly used correct-

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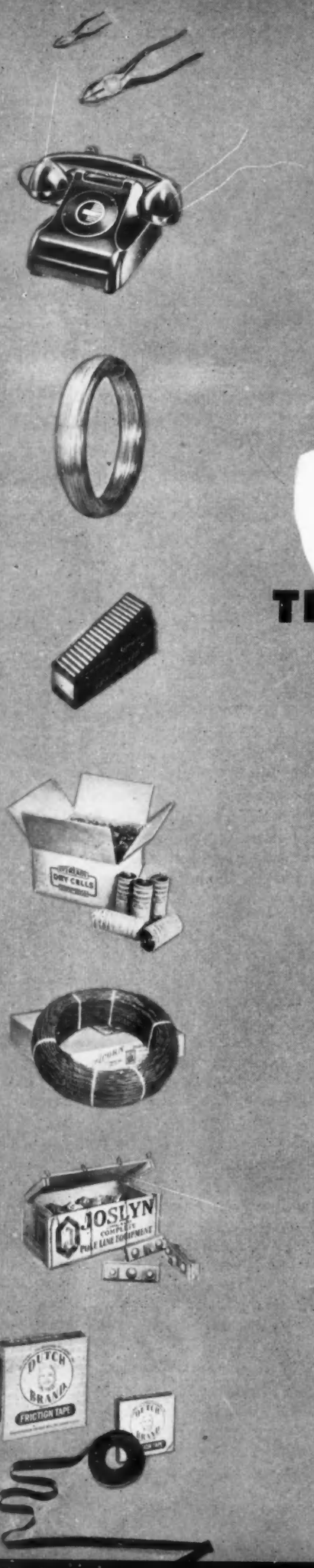

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New customers don't just become old customers with us here at Leich Sales. They become real friends. Why they do might be of interest to you.

First of all, we respect the judgment and experience of telephone folks. We don't try to sell them something just as good. We know they want and need the highest quality tools and materials for everything they do. No fancy promises are necessary. Our old friends have long ago discovered that we keep our promises, no matter how inconvenient it may be to do so.

Every single order, large or small, is appreciated sincerely, is handled as rapidly and efficiently as possible. Friends in trouble know that we here at Leich bend over backwards to help them—to make their jobs easier—and to save them work and worry.

We like to do business this way. Not only is it profitable for us—but for our friends and customers as well.

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SALESMAN

DATE

NO.

BILL TO Peoples Telephone Co SHIP TO Jamestown, Illinois

TOWN Jamestown, Illinois P. O.

FRT. STA.

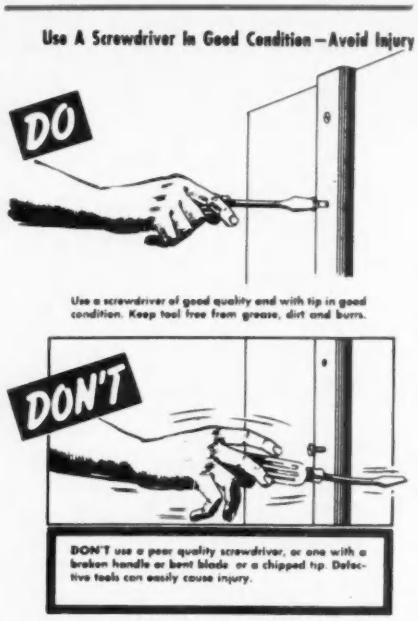
Leave Blank	Amount	Cat. No.	Description	Price	Total
	1 Coil		No. 12 BWG Anaconda 85 Grade Telephone line wire		
	100	5-169 G	Ni-Lo-Loom Sleeves		
	8 rolls		3/4" Dutch Brand Friction Tape		
	3000 ft.	P-17-NS	17 B&S Green Parallel Neoprene Drop Wire		
	100	6-C6A	Columbia No 6 Dry Cells		
	2	201-T	Klein's Side Cutting Pliers		
	25	1-991	Jacklyn 3 Volt Ring Lamps		
	3	601-A	Leich Common Battery Telephones - the ones you can use as wall or desk Telephones		

LEICH MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 190

ive means the *Toolroom control* method provides a definite system whereby all tools are issued through a toolroom with proper provision for maintenance and replacement which is necessary to both safety and economy. All companies make some effort to keep the cost of tools down, but many do not keep close control of them in the interest of safety. In small companies it may be a part-time job, but regardless of plant size, the system should be definitely worked out to keep the proper tools on the job in safe condition.

Even the best toolroom control set-up cannot be depended upon to function continuously without check-up. An occasional inspection of the tools (both in the stockroom and in use) should be made by a safety-minded executive, the safety engineer, or a safety committee.

Layout of all work should be carefully planned to minimize the hazard of tool use. For instance, chipping work should be so placed or protected that workmen on other tools are not endangered, provision should be made to avoid running extension cords (flexible conductors) where men may trip over them, etc.


Use A Screwdriver In Good Condition—Avoid Injury
DO
Use a screwdriver of good quality and with tip in good condition. Keep tool free from grease, dirt and burrs.
DON'T
DON'T use a poor quality screwdriver, or one with a broken handle or bent blade or a chipped tip. Defective tools can easily cause injury.

Other corrective means that are aiding many telephone companies in reducing accidents charged to hand tools include the following:

(A) *Proper personal protective equipment* provided (or required) for men doing grinding or other work that produces flying particles.

(B) *Training*—Careful education and training in the safe use of such tools as powered drills and chisels, wrenches, axes, etc., given to all repair, construction, maintenance and installation employees.

(C) *Safety-minded supervision*—Although the most important job of the foreman or supervisor has been to get the work out, keeping costs down and quality up companies possessing the best safety records have impressed upon all supervisors that the job can be done with the minimum of human injury, and that methods that eliminate accidents are always in the interest of production, quality, and economy.

(D) *Places for tools*—A suitable holder or place provided for every tool used. For many edged tools both condition and safety are advanced by providing protective sheaths or guards to be kept on the tool whenever it is not in actual use. For portable powered tools, torches, etc., suitable hangers or supports will not only lessen tool damage and promote safety but, if properly placed, will be found more convenient for the worker.—THE END.

Keep Clear Of Sledge Hammer—Avoid Injury
DO
Have a helper use tongs or other proper holding device when holding work to be hit with a sledge hammer. Make sure no one is standing within range of your swing when using a sledge. Both men should wear goggles.
DON'T
DON'T permit anyone to hold with his hands work that is being hit with a sledge hammer. Never swing a sledge until sure that head is firmly fixed and there is nothing to obstruct your swing.

Use Proper Type Of Hammer—Avoid Injury
DO
Riveting
Setting
Ball Peen
Cross Peen
Straight Peen
Claw
WOOD WORK
METAL WORK
Use correct type of hammer in good condition for the work being done. Various types of hammers are designated for particular jobs and should not be used otherwise.
DON'T
DON'T use a wrench, rod, large bolt or other piece of equipment for a hammer. Never strike hardened objects, such as a wrench or another hammer, with anything except a rawhide or soft-metal hammer.

SMALL COMPANY TALK

By
BILL CORMAN

ARE YOU paying yourself a salary—a certain specified amount, paid at regular intervals to reimburse you for the time and labor that you expend on behalf of your company ? ? If not, then Bill has an idea that its high time to take a look at the salary question and the difference between salary in payment for your work and the profits you get for investing your money in the telephone business . . .

HI NEIGHBOR! How much money do you get for running your telephone company? No, I'm not trying to be nosey. This is a pertinent question. Not only how much do you get, but *How* do you get it?

First of all, you should pay yourself a salary, a salary that is a certain specified amount to be paid at specified intervals. This is pay for the time and labor that you expend on behalf of the telephone business. It pays you for the time you spend managing your company, for the labor you expend in climbing poles, clearing trouble, installing telephones, engineering new lines, making traffic studies, operating the switchboard (if you do that) and for all of the other thousand and one things that a small company man does.

This salary idea holds true regardless of the form of your company, that is, whether it is a proprietorship, a partnership or a corporation. In the case of the sole owner type of business, it may be that paying yourself a salary involves drawing a check on your bank account and then going back and depositing it again, which is, of course, just plain silly. The answer is that you should have a completely separate bank account for your telephone business, for having a separate account is the very backbone of a good set of telephone accounting records. The telephone bank account should have deposited in it all of the cash receipts of the business, and all the expenses and expenditures of the business should be paid by check on this account. Regardless of whether you keep your books on a cash or accrual basis, the separate account procedure holds good.

"Expenses" Versus Expenditures

SO THAT you won't think I am squibbling over words, and because the distinction is important to properly maintained records, you will note that I used both the words "expenses" and "expenditures". These are far from the same thing. Cash expenses are outlays of money that are consumed in the current operation of the business, such as an operator's salary, dry cells to replace others that have lost their power, and similar items. Cash expenditures, on the other hand, are any outlays of cash (and may, therefore, include expenses). They also include, however, money spent for items that are not consumed in current operations. For example, amounts spent for wire to string a new subscriber's circuit, for the labor that was spent building that circuit, for a new telephone, and for other items that add to the permanent value of your plant, are all expenditures, but they are capital expenditures and not expenses. This explanation is merely parenthetical, and the whole subject of capital vs. expense will be considered at another time.

Back to the salary idea in the case of a partnership. It still holds true. One or both or all of the partners should draw a salary based on the amount of time and labor spent on behalf of the business—and this regardless of the agreement between them as to the split of profits. If, where there are two partners, one spends all of his time on the telephone business and the other none, then the first should receive a salary and the second should not.

If you are a corporation, the chances are that you are already on the salary basis, for in this case, the corporation is generally recognized as a separate and distinct entity, and the fact that it owes a salary to everybody who works for it is also well understood.

Salary Basis Better Than Drawing Account

THE basic justification for the salary idea as a method of reimbursing an owner is, I suppose, that he would have to pay a salary to someone else if he hired someone

(Please turn to page 46)

SHOCKS LEAVE STROWE

SHOCKS RECALL 1920 WALL ST. MYSTERY BLAST

On a noon rush-hour in the summer of 1920, a horse-drawn delivery wagon was standing at the curb in front of the Government Assay building on Wall street, New York City. Although an uncommon sight in the financial district, the wagon attracted little attention, except for casual notice by a nearby policeman.

Suddenly the air was blasted by a detonation that shook the entire neighborhood. Windows were blown out for blocks, and ticker equipment was wrecked in scores of financial offices. Adding to the confusion was the fact that the public telephone service in the immediate area was seriously impaired. Through it all, however, eighteen Strowger Automatic telephone systems in some of the country's most important financial institutions, and in the partly damaged Assay building, continued to function unharmed and unaffected by the blast.

To this day the cause of the explosion remains a mystery but there is no mystery about the stability and reliability of the "shock-proof" Strowger Automatic systems. The reliability of Strowger equipment is the result of 50 years of Automatic Electric "know-how."

Big-Gun Fire Fails to Halt Strowger Automatic

Most of Uncle Sam's battleships, flat-tops and cruisers are equipped with Strowger Automatic telephone systems. In the heaviest naval fighting in World War II, these communications systems were subjected to tests far beyond anything encountered in commercial shore installations.

Despite bombings from enemy aircraft—and terrific concussions from main-battery broadsides fired by these ships themselves — Strowger Automatic (Ship's Service) Telephones continued to serve efficiently and dependably. On ships that stood off of Tarawa, Saipan and Iwo Jima firing ceaseless broadsides, Strowger Automatic switches functioned normally and reliably throughout the bombardments.

Strowger Automatic systems on ships, as well as in land-based installations, have withstood the effect of shock with remarkable consistency. On numerous occasions a Strowger Automatic system has absorbed shocks which would reasonably be expected to ruin it, and in emergencies the equipment has continued to render invaluable service.

Unit Switches Pro

Whenever Strowger Au e opportunity to prove its e din distinguished itself by din innumerable dramatic tes owg ment has proved that i c independent, individually red standard unequalled for dabi

Strowger Automatic equipm t bu principle. It is not sold with a tee quake or explosion. That it usua ges however, is reliable proof of i ent the high quality of its construct

The simplicity which is chara of tributes much to this dependa ach driven directly by its *own* driv har fected by trouble in adjacent s in f Strowger switch is rare, failure o wge short of actual disaster. In cas lt i units are available instantly to er t

Strowger switches, because simp struction, require no exacting nt extraordinarily resistant to vi an proved time after time during m n 5 ation of Strowger Automatic e t t other type of equipment can this

AUTOMATIC E

Originators and Developers of the Step-by Sender-Translator Operation . . . Switch Makers of Telephone, Signaling and Communication . . . Ele

Distributors Possessio

AUTOMATIC ELECTRIC SALES CORPORA W.
Export Distributors: INTERNATIONAL TIC

WER AUTOMATIC INTACT!

itchesign Pro Its Value!

ger Au equipment has had an ve its dinary sturdiness, it has f by ding performance. In atic tes owger Automatic equip- that i design feature—the idually ed switch—provides a ed for dability.

equipm t built on the "bomb-proof" d with a ee against damage by earth- at it usu rges intact from such ordeals, roof of i ent mechanical stability and construct

n is char of Strowger equipment con- ependa ch switch is a separate unit, *own* driv hanism. It is usually not af- jacent s in fact, although failure of a failure owger exchange is unheard of, r. In cas lt in any one unit adjoining antly to r the load.

because implicity of their unit con- exacting nt with each other, and are nt to vi and shock. This has been during m n 50 years of successful oper- omatic e nt throughout the world. No ent can his record of performance.

TIC ELECTRIC

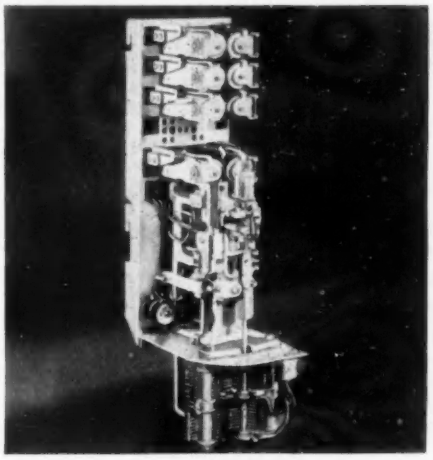
of the Ste p-by-Step "Director" for Register- on . . . Switching Automatic Dial Systems Communicatio . Electrical Engineers, Designers and Consultants Distributors ssessions

CORPORA W. Van Buren St., Chicago 7, U. S. A. TIONAL TIC ELECTRIC CORPORATION

STROWGER AUTOMATIC SWITCH INDEPENDENT, UNIT-POWERED

The basic advantage of Strowger Automatic equipment lies in the simple, straightforwarded method by which it extends a connection to the terminals of a line or trunk. Each switch is an individual unit. It has its own complement of bank terminals and wiper springs and its own self-contained operating mechanism. There are no mechanical connections between switches—no critical alignment requirements. Though the switches of each rank are usually mounted together on "shelves" and switchboards, this arrangement is extraordinarily flexible and subject to any modifications necessary in any particular case.

Another advantage of the individual unit design of Strowger equipment is the ease with which the switches can be rearranged at will to increase or decrease the capacity of a group to meet changes in the volume of traffic, or to regroup circuits to meet varying traffic conditions. Since the individual switch units are light and easily interchangeable, they can, when the occasion requires, be cut out of service or moved from one location to another on an individual basis without affecting the other switches in their respective groups. This is because there are no mechanical interconnecting links between individual Strowger switches or frames. The remarkable facility with which rearrangements of Strowger equipment can be made is one of the outstanding advantages of this type of equipment.



BUILDING EXPLODES; STROWGER AUTOMATIC STILL OPERATIVE!

When an explosion recently demolished the automatic exchange building at Flat Rock, Michigan, the town's 1,000 automatic telephones were put out of service for only a few hours.

The explosion shattered the evening quiet of the community. All four walls of the building were blown out and the roof blasted skyward. Windows were broken within a radius of two blocks. But when the smoke cleared away, a modern miracle was revealed. In the middle of what had once been a room, the Strowger-type switching equipment stood upright and apparently undamaged. Repair crews soon swung into action, and then it was found that the equipment had actually withstood the blast with little damage; some of it could be put back into action within a matter of minutes. In less than four hours, local service was restored to 34 public telephones in Flat Rock, and emergency service was provided for the police, fire department and nearby public institutions.

Complete service was restored to the entire community before daylight. Meanwhile construction men cleared away the debris, temporary housing was erected over the frames and switching equipment, and work was started on the construction of a new, permanent building. The explosion and restoration of service all took place within a period of 12 hours—another tribute to the simplicity and sturdiness of Strowger-type Automatic equipment.

else to do the job he does. But the advantages of this type of reimbursement, and the reasons for it, reach down into the heart of good business. The time-worn device of the drawing account might be all right for the peanut vendor, but it is hardly appropriate even to the smallest of telephone companies. In the first place, it is conducive to loose thinking about many parts of the telephone business. In the second place, it is difficult to handle properly in an even half-way good set of telephone records.

A salary has the advantage of being constant, and therefore predictable. It has the advantage of requiring similar sums of money for similar amounts of time and labor expended. It gets proper expenditures charged to the proper accounting periods, whether the period be months, quarters or years, and it is much easier to divide properly between capital expenditures and expenses than are other forms of reimbursement, such as the drawing account.

Of course, if you use a drawing account and pay yourself a certain sum at certain intervals, you are, in reality, drawing a salary, and that is a perfectly satisfactory method. In most drawing accounts, however, it is $5.00 now and $10 then and $50 some other time, all without regard to date or amounts of previous drawings, and that is not a salary.

Now let us suppose that you start paying yourself a salary and that your telephone bank account runs out of money because of it. If it is a reasonable salary, based on the amount of actual work you do for the telephone company, then you come immediately to the hard fact that your telephone business is a losing proposition, regardless of what you may have thought up to now, and it is up to you to get busy and do one of two things (or a combination of the two): Increase your income or reduce your expense. There are dozens, probably hundreds, of ways to do either, and figuring out which to do and how to do them will get you right down to the bed rock of management.

On the other hand, let's hope that paying the salary does not drain the well completely dry, and so you have your pay coming in regularly. Well and good, but that is *not* the end of it. You are still due another kind of reimbursement: *Profits.*

Profits are the pay you get for investing your money in the telephone business—salary is the pay you get for investing your time and labor in the telephone business. You should get both. If you didn't spend your time and labor on telephone work, you could sell it to someone else. If you didn't spend your money for telephone property, you could invest it somewhere else and get a return on it. So, if you spend both on your telephone business, it should pay you a return on both.

And, if, at this point, you find that there is not enough to pay you any profits after you have taken a reasonable salary, then you are right back to that hard fact that your telephone business is a losing proposition—and it is time to do something about it.

If you believe that your commission will object to this idea of both salary and profits, ask its members about it. If your commission is anything like the ones I have dealt with, I believe you will find that its members are actually happy that you are making a distinction between the two—for it will mean that you are thinking about the two things in separate terms. Your commission, however, may well concern itself about how much salary and how much profit, just as it concerns itself with how much service you give and how much your rates are, for that is its business.

Meet BILL CORMAN, *manager* of the *Southland Telephone Co., Atmore, Ala., secretary* of the *Alabama Independent Telephone Association, member* of the *Accounting Committee* of the *United States Independent Telephone Association,* and *author* of TELEPHONE ENGINEER publications' *latest exclusive feature*—"SMALL COMPANY TALK."

Prior to starting his department in TELEPHONE ENGINEER and MANAGEMENT, Bill told our editors—"*We have all sorts of problems . . . We must be good plant men, good traffic men, good commercial men, and good at a lot of other things—but the key to all of it is management.*"

That statement sort of set the theme for Bill's new department—"SMALL COMPANY TALK"—and we believe his first article sets the pace for the helpful articles that will follow.

Establishing a Reasonable Salary

THIS IDEA of paying yourself a salary usually ends up with the question, "*How much salary?*" It is not an easy question, for it has so many variables. For instance, a reasonable salary in one exchange of 300 stations might not be reasonable at all in the same size exchange in a different part of the country. As a general rule, however, if you pay yourself a salary that is comparable to what other people in your town are getting for work that corresponds in such items as amount of time actually spent, amount of training necessary to do the job, amount of responsibility connected with the job, and other similar items, then you are probably paying yourself a fair salary.

As for the amount of profit on your investment, that question has been the subject of millions of words of debate and contention, and it probably will never be definitely settled, for the reason that what might be a fair profit this year may actually be confiscitatory a short while from now. Again, as a general rule, that amount of profit which will enable the company to function properly, to serve its subscribers properly, and to expand properly is a fair rate of return. This is a management problem: first of determining what is necessary and fair, and second, of convincing the commission of these facts. A company that seeks less than what is necessary and fair is engaging in bad policy and a commission that forces what is less than necessary and fair is not properly performing its duties. Most commissions are not octopuses who want to squeeze you for all they can—its members are reasonable men who will listen to and give consideration to reasonable arguments. It is up to you to provide the reasonable argument.

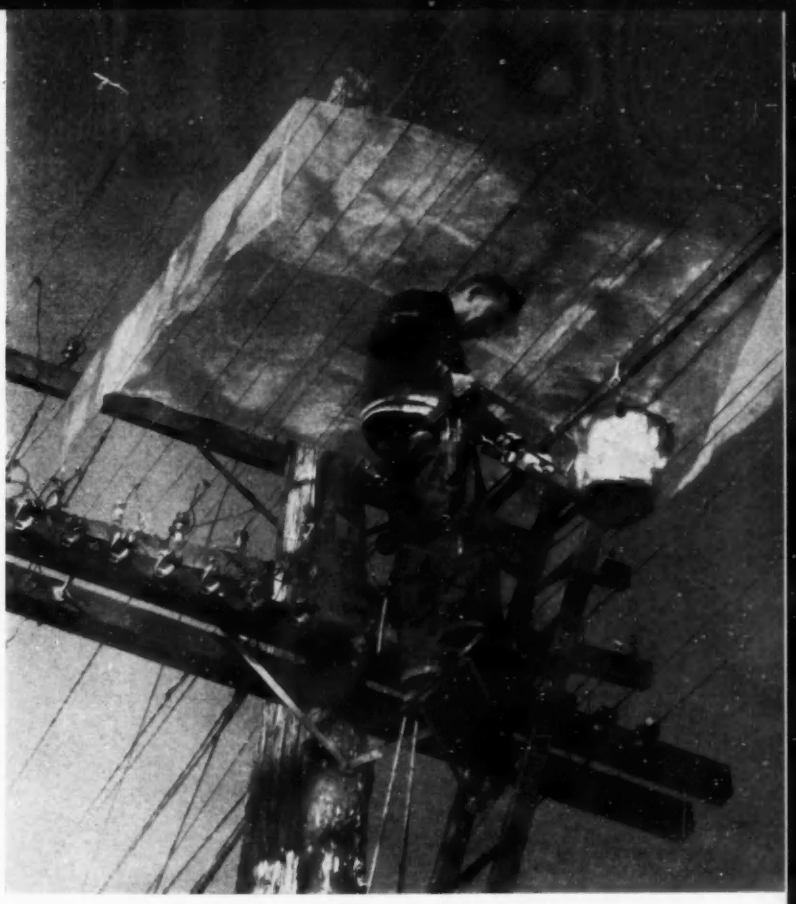
And don't forget that salary—try it and see if you don't like it.—THE END.

Practical

"How To Do It" Suggestions

By
Myrle Shafer

STRAIGHT from the field come these latest "How To Do It" suggestions covering—(1) storage yards, (2) moisture content of wood products, (3) repairing holes in concrete floors, (4) safety rules for rope users, (5) tree wire guards, and (6) correct lifting methods that prevent injury.



Telephone crews on outside work are finding new substitute for the "canvas tarp," a great aid in bad weather. The "Star Tarp," a tarp designed especially for telephone and power company use, is fabricated of heavy gauge Vinylite plastic. Being transparent it permits the worker to take advantage of natural daylight, yet offers protection from wind, rain, snow, or sleet. Unlike canvas tarps, the "Star Tarp" can be folded up wet without danger of rotting.

Keeping Storage Yards Clean

EVERY TELEPHONE company, no matter how small, has its storage yard where poles and crossarms are stocked, cable reels are kept, and trailers are parked. Good housekeeping rules are just as important within the yard area as in the telephone building. If the yard is not habitually kept clean and neat, it will in time become rank with weeds and will be a catch-all for discarded materials. Such a situation can result in a serious fire hazard.

The poles and crossarms should be stacked on raised creosote treated skids, so that the bottom poles or crossarms will be at least 12 inches off the ground. The poles should not be solidly stacked over a single area, but should be laid with 2" x 4" lumber between layers and with the piles not more than 6 feet or so wide. Aisles should be provided between the piles. This arrangement enables free circulation of air around the poles and helps to keep them dry. Truck aisles around and through the piles should be sufficiently wide to enable the handling of the poles with a truck pole derrick. Old and discarded poles should be piled separately from new and good used poles.

The area under and around the poles and crossarms should be kept free of wood shavings and other debris. Cinders and chemical treatment will keep the yard free of weeds and save considerable labor that would otherwise result, if the weeds were allowed to grow and then be cut down.

It is a good idea to promptly remove empty crates, packing material, and other rubbish. This good habit is easily fostered, if a large bin is provided in a convenient location in the yard accessible to garbage and rubbish collectors. Tree branches and foliage brought in at the end of the day from tree trimming operations can also be placed in the bin.

Moisture Content Of Wood Products

IN THE MANUFACTURE of wood products such as tool handles and ladders, an important factor is the amount of moisture present in the wood. Wood that is not properly seasoned has too much moisture and will later shrink, warp, or split.

An electrical moisture measuring meter has been developed for accurately checking the moisture content of wood products. This meter immediately indicates the amount of moisture at any point on the wood item.

The set consists of two pin points mounted on a test prod, which is connected by a flexible cord to a special ohmmeter assembled in a portable carrying case.

The test is made by driving the test prod into the wood specimen and measuring the electrical resistance between the two pin points of the prod. The moisture content is proportional to the electrical resistance between these points. This can be quickly determined by simple adjustment of the test set, which is calibrated to read percentage of moisture content directly.

How to Repair Holes In Concrete Floors

EVEN THE best laid concrete floor will in time become worn and broken through constant use. This is

particularly the case in garages and warehouses, where motor vehicles or material trucks constantly pass over the floors. Such worn and broken places are an accident hazard to workers and cause jars and jolts that may damage trucks and equipment. They also greatly detract from the general appearance of the building.

This condition need not be tolerated, since holes and ruts in the damaged floor can be easily repaired by means of a floor patching mixture known as Stonhard Stonfast. No preliminary preparation or mixing is required. All that is necessary is to clean out dirt and dust from the hole or rut, place the patching material in the opening, and then tamp or roll down till a flush patch results. The floor is immediately ready for use, even under the heaviest traffic. The steps in applying floor patch mixture and the resulting patch are shown in *Figures* 1 *to* 3.

Fig. 2—After placing the patching material in the hole or rut, tamp or roll down the material until a flush patch results.

Safety Rules For Rope Users

IMPROPER and unsafe methods of handling rope in construction and maintenance work, aside from damaging the rope, have caused accidents to workers. The following precautions are worth observing:

(1) Know how to make all knots required in your work. The wrong kind of knot or an incorrectly made knot may fail under stress and cause a serious accident. Be sure to leave enough rope end when making a knot so that it will not pull out when tightened.

(2) Remember that overloading rope will cause it to lose its strength. Sudden stresses or repeated stresses has the same effect. Use the right size of rope for the job and apply the load gradually, never with sudden jerks.

(3) Acquire the habit of examining rope for wear and defects before using it. Look for external evidence of abrasion, cuts, decay, or burns. Open up the rope strand every three or four feet and note if broken fibers, mildew, powdery dust, or unusual color of fibers are present. If extensive defects are found, it is best to throw the rope away. Rope that has become very soft and that has lost its stretch is dangerous to use.

(4) Don't let rope get twisted or kinked. Turn out kinks before the load is applied. Even under light loads, a kinked rope will be greatly weakened or will break.

(5) Avoid spilling chemicals, paraffin, or molten solder on ropes. Battery acid will quickly render rope unfit for use.

(6) Never store rope that has become wet. Coil the rope loosely on pegs and do not place it in storage until it is thoroughly dry. Avoid draping the rope on steam radiators as too rapid drying will damage it. Be sure the storage room is dry and well ventilated.

(7) When using rope blocks, be sure that there are no sharp edges or nicks on the sheaves to abrade or cut the rope. Don't let the rope get out of the sheaves and rub on stationary parts of the blocks. Be certain that the blocks are of the right size for the size of rope used. Sheaves that are too small will cause excessive wear on the rope.

(8) Do not stand closer than absolutely necessary to rope that is under tension. Avoid getting in the

Fig. 1—Clean out dirt and dust from hole or rut, and place the patching material in the opening.

Fig. 3—Immediately after the patching material has been tamped into place the floor is ready for use.

way of rope that may suddenly straighten out. Be careful not to catch your hand in rope being taken up on a niggerhead, or being snubbed around a fixed support. It is a good idea to always wear gloves when handling rope to protect your hands from hard fibers.

"Snapon" Plastic Tree Wire Guard

SHORTLY after publication of our item describing "Special Guards For Drop Wires" (page 17, June 1947 FORTNIGHTLY TELEPHONE ENGINEER), Martin M. Stekert of 45 West 34th St., New York 1, N. Y., advised that *Fig.* 1 had been incorrectly captioned. We have investigated and found that we had erroneously used a photograph of the "Snapon Plastic Tree Wire Guard"

Fig. 4—"Snapon" Plastic Tree Wire Guard.

with our item. However, the error served to bring to our attention a handy item that is being used as standard equipment by many utility companies.

The "Snapon Plastic Tree Wire Guard" shown in *Fig.* 4 consists of two overlapping U-shaped sleeves of tough resilient Tenite plastic. Applied without tools or fastenings, the guard is fitted by snapping the top sleeve over the bottom one around the wire to form snug fitting, nonrubbing, weather-resistant, water-repellent protection. The guards are made in different sizes for wires of varying standard dimensions, and in 6-foot lengths which may be cut to shorter sizes, if needed.

According to Mr. Stekert, the plastic guard increases the di-electric strength of the wire, protects it from abrasion of tree limbs and branches, eliminates arcing and burning at the point of electrical stress, and reduces current breakage from braid to ground. Since Tenite is exceptionally light in weight, it imposes very little extra drag on the wire, and the overall diameter of the wire is only slightly increased by addition of the tightly fitting Tenite sleeves.

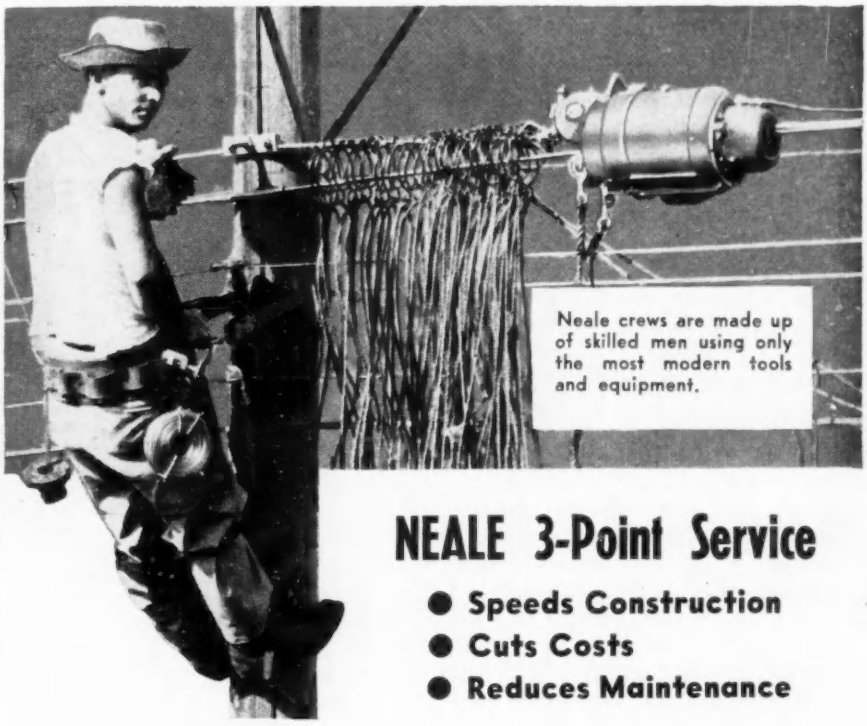
Mr. Stekert also advises that his company had the spiral guard years ago and abandoned it after exhaustive tests in favor of the "Snapon Guard" which he states does not (1) permit water to enter and (2) is a better protector against abrasion.

Use Correct Lifting Methods

MANY THOUSANDS of workers are lost to industry for several weeks each year due to weight-lifting injuries resulting in strains, sprains and hernias. It is imperative, therefore, that each worker know the basic fundamentals of lifting and carrying heavy objects.

When lifting an object alone the carrier should face the object with feet far enough apart to give a good base of operation without straining the abdominal muscles. (The length of the shoe is a good guide for the distance between the feet). He should adopt a stance which is comfortable and will enable him to lift

Please turn to page 74)



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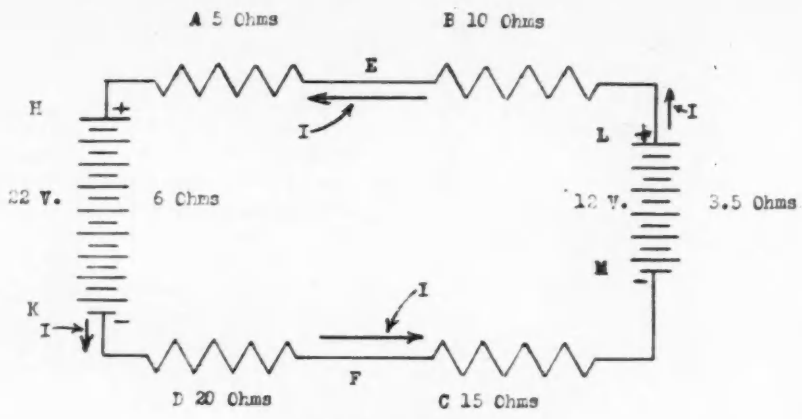


FIGURE THREE

KIRCHOFF'S LAWS

By

JAY G. MITCHELL

(Part I of Mr. Mitchell's valuable discussion of "Kirchoff's Laws" appeared in the August, 1949 issue of TE&M)

THERE are certain advantages, as will be shown in the solution of the circuit in Fig. 3, in employing the direction of the electron drift concept for the direction of the current flow. One great advantage becomes apparent at once when additional sources of energy, making the number more than one, are introduced in the problem conditions. In Fig. 3 and following illustrations the current flow in each loop will be assumed to start from the negative terminal of the dominating source of energy and to pass through the external loop to the positive terminal of the source.

Referring to Fig. 3 it will be noted that a second battery L,M, has been included in the circuit as it was shown in Fig. 1. This newly added battery has an E.M.F. of 12 volts and an internal resistance of 3.5 ohms. By tracing the circuit connections it will be seen that the two batteries H, K, and L, M, are so connected into the network as to place their polarities in opposition. Remembering that the direction of electron drift is now to be considered the direction of the current flow a rule can be stated as follows. The E.M.F. of any battery in a loop circuit is to be treated as a *positive* quantity when its positive terminal is the *first one in order* encountered in following, in the direction of the electron drift, the circuit through its loop and as a negative quantity when its negative terminal is the first one encountered. In writing the equations under the two Kirchoff's Laws for each closed loop, positive quantities are to be added and negative quantities are to be deducted. In the solution of the circuit shown in Fig. 3 the current through the dominating battery will be designated by the letter (I) and that through the other segment loop of the circuit by the letters (III) The current through resistance G, to be added in a later network problem, will be designated by the letters (II).

Referring to Fig. 3 and writing the equation expressing Kirchoff's Second Law by tracing the closed circuit K, D, F, C, M, L, B, E, A, H, K, starting at K we have:

$22 - 20(I) - 15(I) - 12 - 3.5(I) - 10(I) - 5(I) - 6(I) = 0$

By collecting and combining terms this is simplified to:

$59.5(I) = 10$

$I = 0.168$

It may be helpful to the reader, in this connection, to point out that this solution of the circuit shown in Fig. 3 (current strength of 0.168 ampere) also means that there is a drop in voltage (general equation (2)) of 0.168 *volts per ohm* in each of the resistances. In other words in any resistance in the loop shown in the figure, which is conducting a current of 0.168 amperes flowing through it, there will be created a drop of potential due to that current of 0.168 volt for each ohm in the given resistance. If it is desirable to compute the difference of potential between the points E and F the procedure would be as follows:

The difference of potential between E and F, under an application of Kirchoff's Second Law to the circuit shown in Fig 3, may be stated as follows:

$-15(I) - 3.5(I) - 10(I)$

since (I) in this circuit equals 0.168 volts per ohm as pointed out above, this is minus 28.5 times 0.168 or minus 4.788 volts. This illustrates an obvious short cut which is applicable to any loop provided the loop has been solved for the strength of current flow and the resistances involved are definite and known. The accuracy of this determination of the drop in potential between points E and F may be checked by a computation of the drop in potential in the other portion of the loop A, H, K, D. This is expressed by:

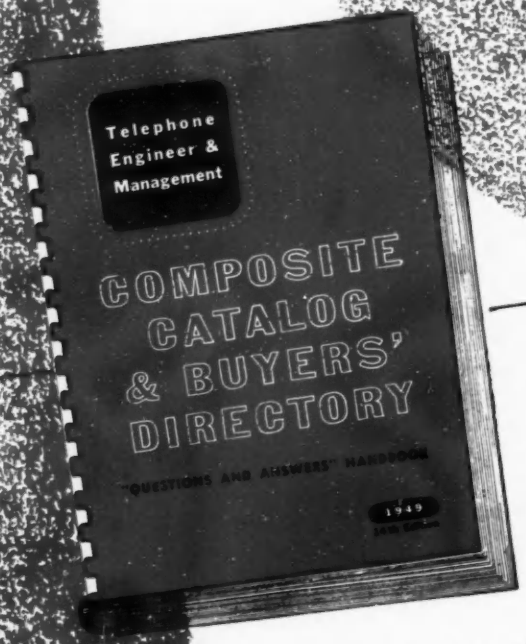
$-5(I) - 6(I) - 20(I)$ or 31 times 0.168 volts which is minus 5.208 volts. Minus 4.788 volts and minus 5.208 volts is minus 9.998 (10) volts which is the total current causing difference of potential in Fig. 3 around the entire loop (22—12). The reason why the determination of the drop in voltage in the entire loop or in a portion of the loop results in a negative figure is because, as will be recalled, the direction of the electron drift is from *negative* to positive through the loop and a resistance or an inserted contra polarity source of energy in the equation, under the first of Kirchoff's laws, must have the effect of reducing the total loop drop as the positive terminal of the source is approached and is negative for that reason.

In the application of Kirchoff's Laws, in some cases, it may be very difficult to determine by simple inspection the direction of the current flow in a given loop. This need cause no concern because the direction may be *assumed*, in case of doubt, and the circuit solved for the current strength. If the value for the current, in amperes, is found to be a *negative quantity*, after working out the solution on the *assumed basis*, then it is certain that the direction assigned for the current flow is incorrect. When the correct direction of current flow has been used the value of the current strength in amperes will always be a positive quantity.

It will be noted, upon inspection of

What is—

BUTAPE?
DREADNAUGHT?
GATORHIDE?
LITTLE GIANT?
PUROX?



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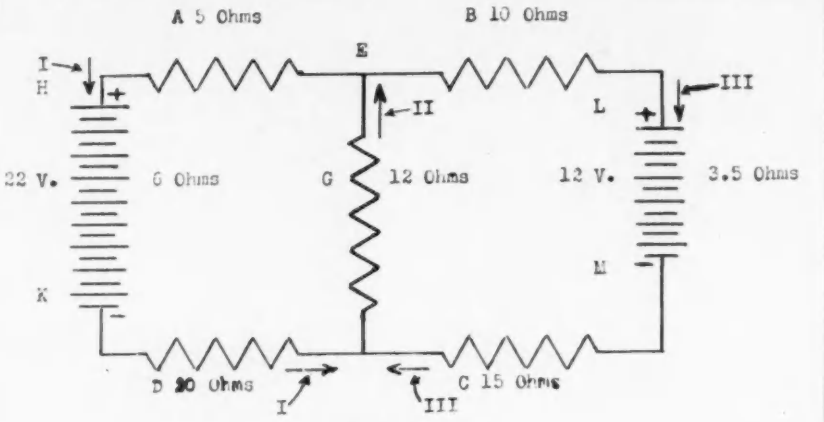


FIGURE FOUR

Fig. 4, that it is the same circuit as that shown in Fig. 3 with an additional shunt resistance G connected between the points E and F. The resistance assigned to G is 12 ohms. It is, of course, understood that the resistance values given in these illustrative circuits all include, in each case, the resistance of the connecting wiring. Under this condition the computation of the circuit constants is made much simpler than would be possible if the connecting wiring were included and computed as a seperate resistance item while the principle illustrated would be exactly the same.

The solution of Fig. 4 will comprise, in the one case, a mathematical statement which illustrates an application of *both* of Kirchoff's Laws. The first step, therefore, as always is to carefully decide upon the direction of the current flow in each element of the complete network. Then the several directions of current flow must be indicated in the drawing and the simple equations required for the solution stated. As illustrated, there are three currents involved in this network and they have been identified by arrows to each of which has been assigned a letter designation. The characters for the three currents are (I), (II), and (III) meaning current flow 1, current flow 2, and current flow 3. Consideration of the circuit will disclose that the relation between the three current values may be stated in four simple equations which are:

$$I+III-II=0$$
$$I+III=II$$
$$I=II-III$$
$$III=II-I$$

These simple equations state the condition in the circuit of Fig. 4 observable under the first of Kirchoff's Laws (At any point in the electric circuit the algebraic sum of the currents flowing to and from the point is zero.).

There are three loops in the network shown in Fig. 4 and the solution of the three constitutes a basis for the complete check of the accuracy of the results obtained. Taking the loop H, K, D, F, C, M, L, B, E, A, H it will be found that both of Kirchoff's Laws must be considered in writing the basic equation expressing the *second law*. This equation is as follows:

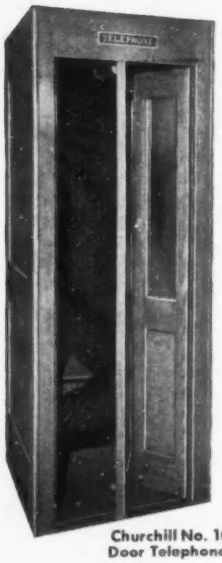
$$22 - 20(I) + 15(III) - 12 + 3.5(III) + 10(III) - 5(I) - 6(I) = 0$$

Combining and collecting terms this is simplified to:

$$31\ (I) - 28.5\ (III) = 10\ (12)$$

In the primary expanded form of equation (12) it will be seen that certain terms are assigned the *positive* sign instead of the *negative* indicating that the drop in the potential in the circuit which they cause is additive rather than deductive. *This is of the greatest importance.* It is correct because the terms to which the positive sign is assigned are the terms which are encountered when tracing the port of any loop and proceeding in a direction *opposite to that of the* indicated direction of the flow of current. This is an example of the great importance of indicating on the drawing of any network by fully identified arrows, the direction of the flow of current *prior to attempting any solution*. Also, as stated above, the E.M.F. of any battery in a loop circuit is to be treated as a positive quantity when its positive terminal is the *first one in order* encountered in following, in the direction of the electron drift, the circuit through its loop and as a negative quantity when its negative terminal is the first one encountered. It is, of course, true that this statement applies to any source of energy, bat-

STROM



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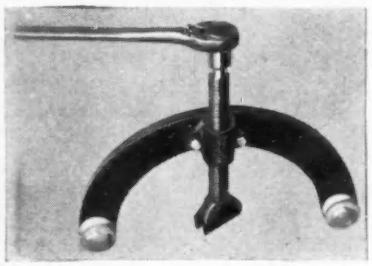

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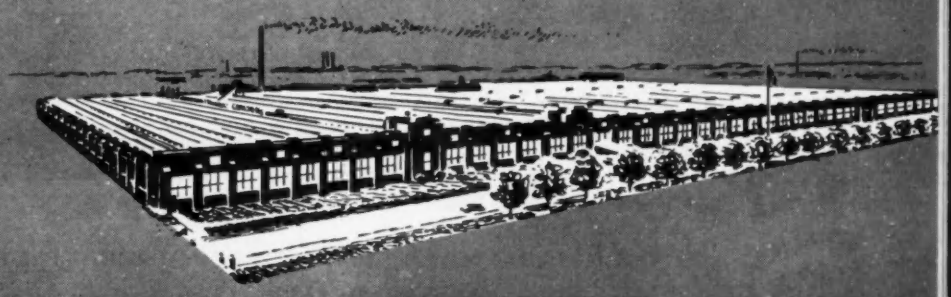

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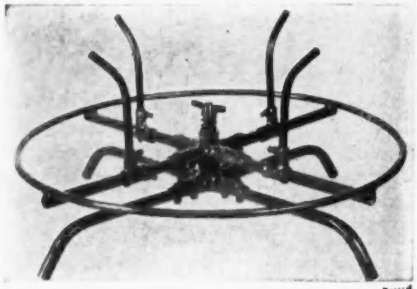

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End objectionable noise interference due to transient and induced voltages, and provide additional lightning protection in bell circuits, with the Vincent Rare Gas Relay. Compact, non-mechanical, the Vincent Rare Gas Relay is easily inserted in the bell box, or at the ground connection or protector block on compact handsets, in series with each bell. It needs no further maintenance.

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The Vincent Rare Gas Relay may be used on magneto or common battery lines. Over 100,000 in daily use! Write for details.

L. S. BRACH Mfg. Corp.

Dept. X, 200 Central Ave., Newark, N. J.

tery, generator or other source, such as a rectifier, which has an output of direct or unidirectional electric current.

The second complete loop included in Fig. 4 is traceable by the letters M, C, F, G, E, B, L, M and its basic equation, expressive of Kirchoff's Laws, is

$$-15(III) - 12(II) - 10(III) + 12 - 3.5(III) = 0$$

Combining and collecting terms this is:

$$28.5(III) + 12(II) = 12 \quad (13)$$

The third complete loop included in Fig. 4 is traceable by the letters K, D, F, G, E, A, H, K. The basic equation, expressive of Kirchoff's Laws, is

$$-20(I) - 12(II) - 5(I) + 22 - 6(I) = 0$$

Combining and collecting terms this is:

$$31(I) + 12(II) = 22 \quad (14)$$

Now since III = II — I, this value for III may be substituted for III in equation (12) and will change the form to

$$31(I) - 28.5(II - I) = 10$$

Combining and collecting terms this becomes

$$59.5(I) - 28.5(II) = 10 \quad (15)$$

Multiplying equation (14) by 28.5 it becomes

$$883.5(I) + 342(II) = 627 \quad (16)$$

Multiplying equation (15) by 12 it becomes

$$741(I) - 342(II) = 120 \quad (17)$$

Adding simultaneous equations (16) and (17)

$$1597.5(I) = 747$$

$$I = 0.468 \text{ amperes}$$

Now since III equals II—I, substituting this value of III in equation (13) simplifies (13) to

$$28.5(II—I) + 12(II) = 12$$

Combining and collecting terms this becomes:

$$40.5(II) - 28.5(I) = 12 \quad (18)$$

Substituting in equation (18) the value already found for (I) (0.468) results in:

$$40.5(II) = 25.338$$

$$II = 0.625 \text{ amperes}$$

Now substituting the values found for I and II in equation (14), *as a check*, results in the identity 31 times 0.468 (14.508) plus 12 times 0.625 (7.500) equals 22.008 (22.0)

Substituting the values found for I and II in one form of the simple equations expressing Kirchoff's first Law to determine the value of III simplifies to:

$$III = 0.625 - 0.468 \quad III = 0.157$$

It may be noted that any one, or, for check, all of the four forms of this equation could have been used.

Substituting known values in equa-

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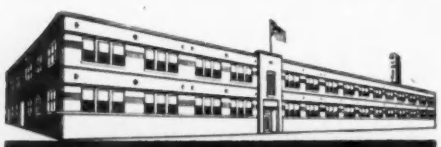

RUNZEL
Cord and Wire Co.
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CHICAGO 41, ILL.

tion (15), as a check, results in the identity

59.5 times 0.468 (27.846) — 28.5 times 0.625 (17.813) equals 10.033 (10.0)

Substituting known values in equation (13), as a check, results in the identity 28.5 times 0.157 (4.475) plus 12 times 0.625 (7.500) equals 11.975 (12.0)

In Fig. 4, therefore the three current strengths in the three traceable loops are:

I = 0.468 amperes
II = 0.625 amperes
III = 0.157 amperes

These values for the current strength in the three separate traceable loops will satisfy all the basic equations given above which are expressions, under the requirements of Kirchoff's Laws, for the network conditions shown in Fig. 4. Under the conditions shown in Fig. 4 also, the drop in potential between the points E and F is 0.625 times 12 or 7.5000 volts. This checks with a computation of the drop in A, H, K, and D which is 5 times 0.468 plus 6 times 0.468 plus 20 times 0.468 or 14.508 volts (22.0—7.500). Also tracing the loop C, M, L, B, E, F, C to check the difference of potential between E and F gives —15 times 0.157 (2.355) — 3.5 times 0.157 (.5495) — 10 times (0.157) (1.570) equals —4.475 (12.000 — 4.475) = 7.525 (7.500).

It will be noted, throughout these illustrations, that small discrepancies appear in the final results. As stated above these discrepancies are of no importance and, in fact, are not really discrepancies but result from the practical limits to which in this outline it is advisable to carry any decimal process. The results given above will be seen, therefore, to closely check with the theory. As an exercise, the reader is advised to compute the quantities for Figures 3 and 4 after the polarity of battery LM has been reversed.—THE END.

OBITUARIES

A. C. STUART, Texarkana, Tex., president of the Two States Telephone Co., which serves several Texas and Arkansas cities, and widely known civic and political leader, died unexpectedly July 30 on a train near Des Moines, Ia. He was enroute with his son-in-law, George B. Butler, of Austin, Texas, to Alexandria, Minn., where he had spent his vacations for many years.

Mr. Stuart went to Texarkana as a young man to go into the mercantile business with his father, James W. Stuart. He had previously resided in Lewisville and Forrest City, Ark.

While in the mercantile business Mr. Stuart was elected mayor of Texarkana, Texas, and served six years. He was credited with bringing the city out of a discouraging financial situation.

Mr. Stuart became interested in the telephone industry when he was appointed receiver of the Texarkana Telephone Co. He brought this defunct company out of its financial troubles and gradually built the system into the modern dial system which now serves Texarkana and the area.

In addition to his widow, Mr. Stuart is survived by a son, James E. Stuart, vice president of the company, a daughter, Mrs. George B. Butler, of Austin, a granddaughter, Mrs. Claude Phillips, Texarkana, and a great grandson, Stuart Phillips.

RALPH G. ROADSTRUM who was in the telephone business for 44 years preceding his retirement, December 31, 1946, from the presidency of the Intra State Telephone Co., Galesburg, Ill., died in the Galesburg Cottage hospital, August 10.

He had been in declining health since shortly before his retirement from the telephone company.

Mr. Roadstrum was born in Galesburg, September 1, 1875. He attended the public schools and was graduated from high school in the class of 1893. He joined his father in the grocery firm of A. V. Roadstrum & Son for a time, and on January 1, 1903, began his telephone career as an accountant with the Galesburg Union Telephone Co., which later reorganized as the Intra State Telephone Co.

From accountant with the telephone company Mr. Roadstrum came up through the ranks to the presidency following the death of Frederick C. Woods, in 1944. Others who had served as president of the company were Howard Knowles, W. E. Terry, Sr., George B. Churchill and O. N. Custer. Mr. Roadstrum also served for several years as director of the Illinois Association and of the Independent Toll Clearing company and was a member of the U. S. Independent Telephone Association and of the Independent Pioneer Telephone Association at the time of his retirement.

QUESTIONS and ANSWERS

EDITED BY

Jay G. Mitchell

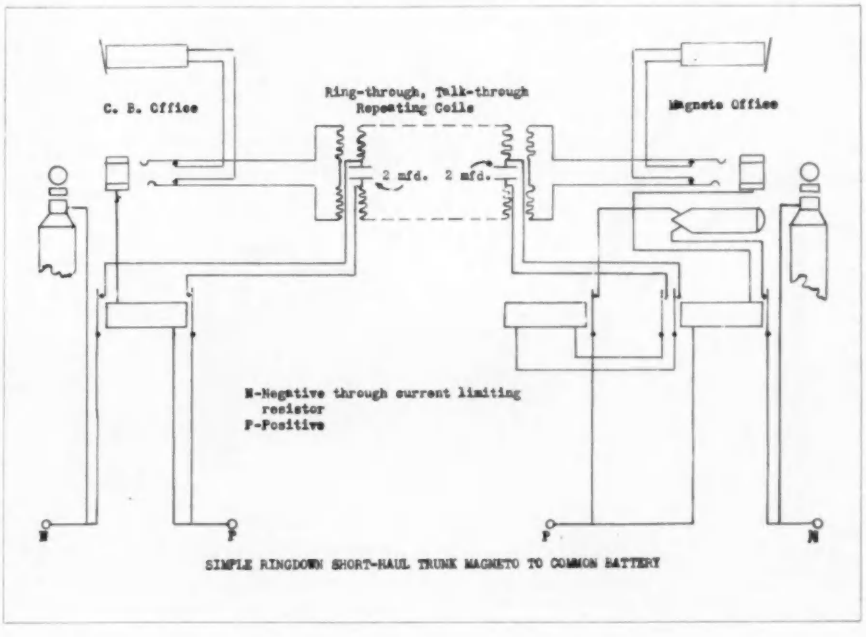
In this issue Mr. Mitchell answers questions covering—(1) supervisory function on the ring down magneto to common battery trunks; (2) "bells don't ring" complaints, and (3) using the EE-65-F test set.

Question: I have the set-up laid out below to look after. This is the problem with which I am confronted. When a party on one of the magneto lines rings in to point "B" requesting a connection with point "D" and, in turn, a subscriber on "D", the operator at point "B" has no indication when the call has terminated. The trunks (ring down) from "B" to "D" terminate at "D" in the "A" or toll position. The cord circuit in this position is split, one half of the cords are to answer toll calls and the other half to answer local calls. This is what I have done with fair success. At point "B" and in series with the tip side of the line I put a B-3 Non-inductive relay which in turn puts on a lamp. When the operator at point "D" answers a call from point "B" and answers with a local cord, the B-3 relay will operate putting on a lamp in front of the operator at point "B". Also in turn when the call is terminated and the operator at "D" takes down her cord the lamp at "B" will go out and the operator at "B" will disconnect.

However, if the operator at "D" answers a call from "B" with a toll cord the B-3 relay at point "B" will not operate. The question to me is why? I would like the relays at "B" to operate whether the operator at "D" uses a local or toll cord. Is this possible? I am enclosing a stamped and directed envelope for your reply.

Answer: This is not at all difficult provided certain modifications can be made at both ends of the ring-down trunks between the magneto office and the common battery office. In the most obvious circuit it will be necessary to have available separate sleeve contacts in the terminal jacks of the trunk circuit and to have three contact plugs at the switchboards also. If this is possible then the attached schematic circuit will probably accomplish the supervisory function desired on the ring-down magneto to common battery trunks. If some other scheme is required, because of the character of the jacks and plugs in the trunk circuit please write in again.

This suggestion will permit of local modification, if necessary to conform with the equipment conditions at the two offices "B" and "D", and is intended to operate as follows. When a subscriber at office "B" calls for a connection with office "D" the operator at office "B" inserts the calling plug of a magneto cord pair in the ring-down trunk jack of a trunk to office "D" and rings. This throws the trunk drop at office " D" (or operates the trunk signal if of another type) and the operator at office "D" inserts a toll line answering cord in the ring-down trunk jack and takes the order for the called common battery telephone number at office "D". It is to be noted that the operator at office "D" should always use the magneto or local battery cord of the pair to answer ring-down trunk calls. Otherwise the local station at office "D", which is common battery, will not receive the supply of energizing



SIMPLE RINGDOWN SHORT-HAUL TRUNK MAGNETO TO COMMON BATTERY

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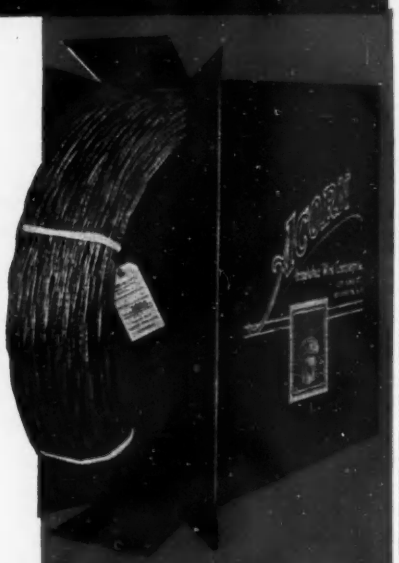

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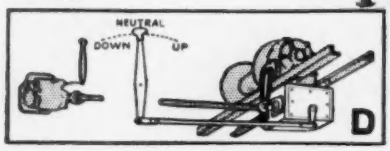

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current for the transmitter unless the cords of the pair are exchanged after the trunked call has been answered.

The insertion of the answering cord local battery plug in the trunk jack at office "D" causes the trunk sleeve relay at office "D" to be operated connecting battery to the tip and ring conductors of the ring-down trunk through the windings of the repeating coil. This causes the trunk relay at office "B" to be operated extinguishing the trunk disconnect lamp at office "B". The lamp remains dark until the operator at office "D" removes the plug from the trunk jack, the conversation having been terminated, when all relays except the sleeve relay at "B" at both terminals of the trunk circuit are released and the disconnect trunk lamp at office "B" is displayed. The disconnect lamp at office "B" has remained dark during the existence of the connection and is displayed when the connection is to be removed. This is in accordance with the conventional practice. The operator at office "D" will have supervision of the connection through the common battery local cord of the pair.

Please let me know how you succeed in clearing this trouble. The sketch illustrates the essentials of a trunk connection and may, of course, be modified to meet local conditions.

Question: I have a question for your question and answer department. The rural party lines in this exchange are being converted from magneto to automatic service. The new automatic extension, which will include the rural lineboard, has not yet arrived although it has been expected for some months.

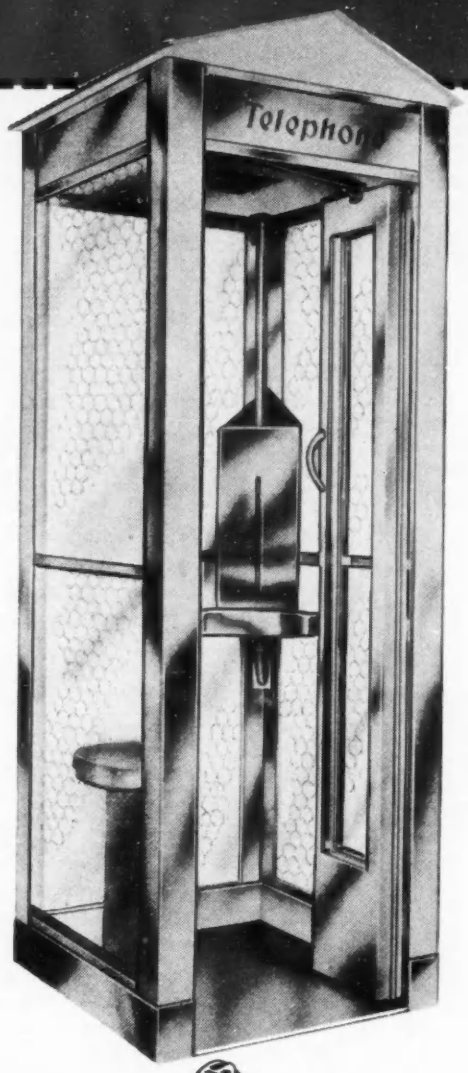
Previously the rural parties signalled central by the push button, generator and central office grounded relay method. About November 1, 1948 we started changing the instruments to the dial type and it was necessary to remove the ground from the central office relay and place it across the line, so that now there is looped signalling instead of grounded. This arrangement will be used until the cut over to dial service which we expect will be in about two months. The new instruments use the magneto to signal other parties on the same line and will dial from ground through the dial and hookswitch to the center point of the ringer coils. There are 530 parties on 54 rural party lines.

At first the bells on the new instruments rang good but now we are

(Please turn to page 60)

THE BOOTH FOR OUTDOOR LOCATIONS

SHERRON STAINLESS STEEL AND WIRE GLASS BOOTH



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getting complaints of "bells don't ring" and we are finding that the permanent magnets of the ringers are becoming demagnetized. This was particularly noticeable after a bad wind and static storm of January 2, 1949. Several parties reported that the bells rang continuously during the storm. Apparently the static discharges caused the loss of magnetism, which did not occur previously because the static was drained off through the grounded central office coil. What is the explanation of this? We have many bridged ringers on ungrounded long distance lines and there has been no such trouble on them. I have a fair working knowledge of the theory of a polarized ringer gained from J. G. Mitchell's "Home Study Course in Telephony" and other studies. An early reply would be greatly appreciated.

Answer: Before the modification of the instrument circuits in this case the telephone ringers were *always operated* by ringing current from the central office or by ringing current from the other telephones on the same line *and the central office relay was not bridged across the party line circuit.* The impedance of the central office relay should be checked to make sure that it is not sufficiently low to act as an effective shunt on the circuit when the signalling is being done by hand generator from some of the party line telephone stations. It may be found that the ringer magnets at some telephone stations were weak but not sufficiently so to affect the ringing noticeably before the change was made. The remedy is, obviously, to recharge such magnets and this can be done economically by changing the ringers, one at a time, so that the offending ones can be taken into the shop for a complete check and test as well as magnet recharging.

It should also be remembered that the flow of any current to earth from the line wires, such as the current due to static charges, through the ringer windings can only occur when the telephone receiver is *off its hook completing the circuit through the dial and the ringer windings to earth.* Possibly some of the party line subscribers, annoyed by the continual jingling of the telephone ringer, may have left their receivers off the hook during the storm to secure quiet.

It would also be advisable to make sure that the line circuits on which the trouble has occurred are not carrying any leakage current from foreign circuits especially direct current circuits such as telegraph lines. If the static is serious on these circuits it might be found necessary to install drainage type protectors on the pole lines to help in keeping the circuits clear of foreign potential of any sort.

Please write in again and advise what is finally found to be the cause of your trouble.

Question: We have a surplus EE-65-F Test Set. It works very well on our Magneto lines. But what steps are necessary to utilize it on a straight C. B. installation or a C. B. and kick coil arrangement?

Answer: The EE-65-F Test Set, made for the U. S. Army, is a portable outfit wired and equipped for practically all tests required for the maintenance of small common battery and magneto telephone installations, except transmission measurements. This set requires a three volt dry battery and two sources of current (batteries) delivering about 22.5 volts each. It is my suggestion that you secure a copy of the circuit wiring if you did not receive one with the set. The testing of kick coil magneto circuits equipped with common battery telephones must be made from the line terminals *outside of the kick coil connections to the line.* Otherwise it will be impossible to test the insulation or other conditions on the line because of the presence in the talking circuit of the kick coil. Care should be taken to connect the battery to the test set in accordance with the polarity indicators on the terminals in the set.

Free Help on Problems

IF YOU'D like Jay G. Mitchell's technical and helpful opinion on some question, a postcard will bring you a reply in these columns. Or if you're in a hurry, please send along a stamped self-addressed envelope for immediate reply.

REWARD | THE BEST INCENTIVE

BUSINESS is somewhat like stud poker. You put up some money to start with. To back up your investment you put all the skill, effort and alertness you have into the game. You are constantly running a risk. You might lose everything you have. But you are spurred on by the possibility of making a profit.

That's the way it is with business. Some business organizations fail. But more succeed because they have learned how to make a profit and stay in the game.

There are 3.5 million business concerns in the United States. They employ over 60 million people under the best working conditions in the world. Wage earners in the United States make from 2 to 10 times as much money as workers in England, France, Belgium, Switzerland, Germany or Russia. They have more job security, pensions, retirement benefits, and medical service than those in any other country in the world. They have these benefits because their employers can make profits.

Business runs risks in trying to make profits. It must make products of the right design and right quality at the right price. It must have them at the right place at the right time. Even then it's all up to the real boss—the American consumer. He can either buy the product or leave it. Basically he represents the difference between profit and loss in business. Business must satisfy him to make a profit.

When a business does not make a profit, it soon goes under. With it go jobs and other benefits that a profitable business provides. In 1929, close to 130,000 businesses failed. Some might not have failed, if in good times, they had made enough profit to weather the storm of recession and keep men on their jobs. That is why it is good business for everyone, owners, managers and employees to put something aside in good years so that business can weather a few storms.

Privately-owned industry operating at a profit has given the American worker a higher standard of living than meted out by Communism, Socialism or any other ideology. When business can keep on making profits and better satisfy the needs of the people, there is less possibility for any other system to get a foothold.

Have you tried the new

RO-9u

Sub-station Protector

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CHICAGO 14, ILLINOIS

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Amertel-135 Wires have tensile strength 2½ times that of standard BB grade wires. This extra strength permits long-span construction, often reduces pole requirements by 50%. Span lengths of 350 feet are possible in heavy loading districts, 500 feet lengths in light loading districts. This means less digging, handling, connecting . . . less costly labor. And Amertel lines *stay* up, even under extreme weather conditions. There are fewer service interruptions, less maintenance required when Amertel wires are installed.

For PLUS protection, use **U·S·S American Armor Rods** to guard against abrasion caused by vibration and swaying. They afford improved distribution of line-wire stresses at the support, and during periods of ice and wind loading they secure the line wire firmly to the insulator. The service life of telephone lines can be further extended by improved tieing methods that enable the conductor to withstand extra millions of oscillations, prevent damage from chafing, tie burns and corrosion.

Write for complete information on these Amertel Wires and on our regular "B.B.," "E.B.B.," and "Steel" wires.

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Look for this tag.
It is your assurance of highest quality wire.

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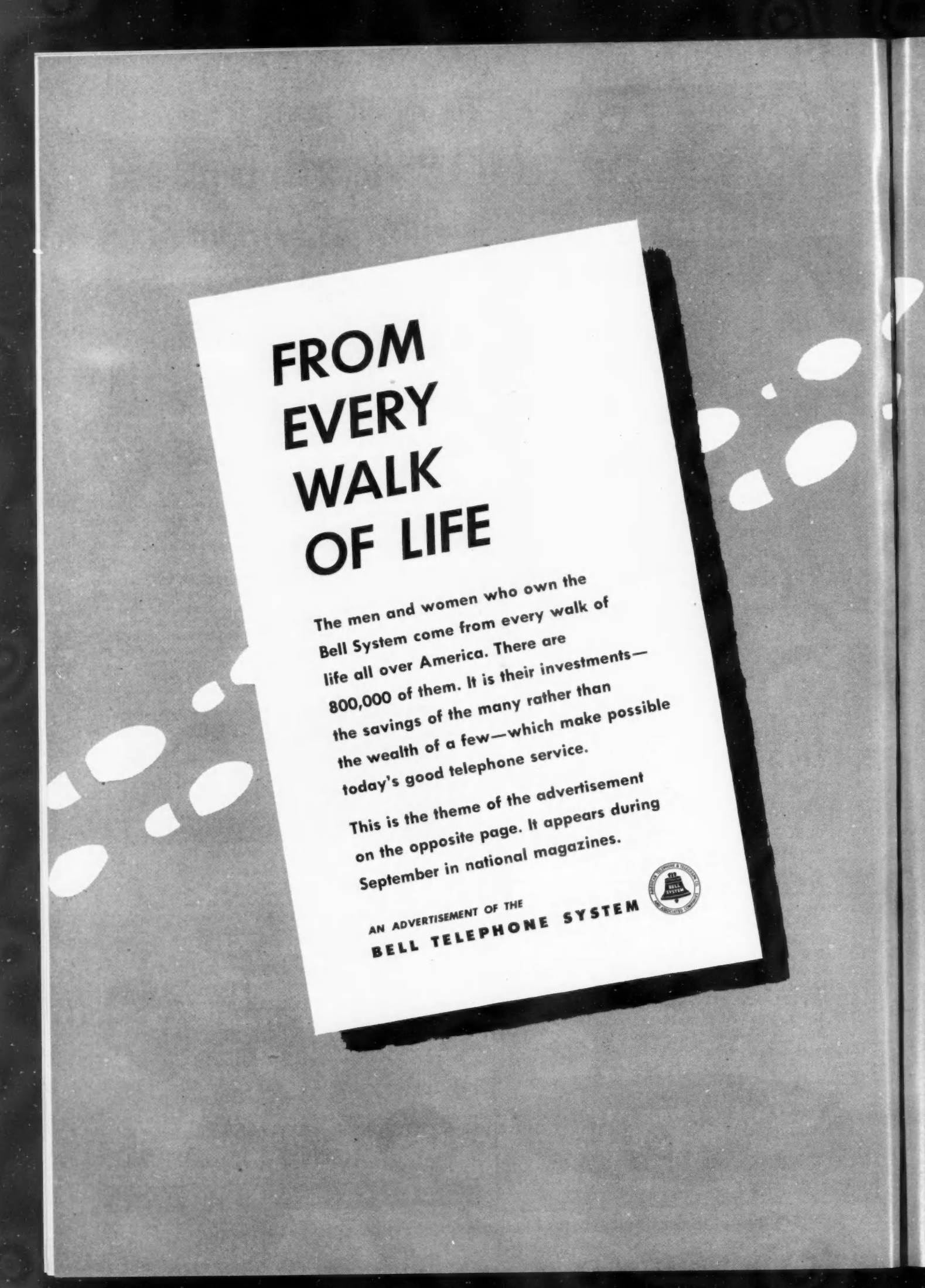
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WALK
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The men and women who own the Bell System come from every walk of life all over America. There are 800,000 of them. It is their investments—the savings of the many rather than the wealth of a few—which make possible today's good telephone service.
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800,000 people own the Bell Telephone Business

One out of every 60 families in the United States shares in the ownership of the Bell System

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Most of them are small stockholders. 230,000 own five shares or less. The average holding is thirty shares. More than one-third have owned their shares for fifteen years or longer.

No one—no individual, company or institution—owns as much as one-third of one per cent of A. T. & T. stock.

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Every time you use the telephone, the accumulated, small investments of these hundreds of thousands of people go to work for you.

They have built the best and most widespread system of communication in the world for you to use at low cost. It is from their savings, and the savings of many like them, that the money needed to improve and expand the service comes.

A fair and regular return on the money these stockholders have invested is an important factor in making possible the good telephone service you get today.

BELL TELEPHONE SYSTEM

A HANDBOOK for Telephone Men

SUBJECT—Stringing Sags For Copperweld Telephone Conductors

INDEX: Open Wire Construction
DATE: September 15, 1949

TABLE 3—Medium Spans—160 to 280 Feet

Stringing Sag in Inches

Span Length Feet	Temp. 0°F.	Temp. 30°F.	Temp. 60°F.	Temp. 90°F.	Temp. 120°F.
160	6.0	8.0	10.5	14.0	19.0
180	8.0	10.5	13.5	17.5	22.5
200	10.0	13.0	16.5	21.5	27.0
220	12.5	15.5	20.0	25.5	31.5
240	15.0	19.0	24.5	29.5	36.0
260	18.0	22.5	28.0	34.5	41.0
280	20.5	26.5	32.5	39.0	46.5

Stringing Tension in Pounds

Corresponding to above Stringing Sags

Temp. °F.	No. 8 Awg. (.128")	No. 9 Awg. (.114")	E.H.S. (.104")	H.S. (.104")	No. 10 Awg (.102")	"12-40" (.081")
0	261	208	172	172	165	104
30	209	168	138	138	132	83
60	166	132	109	109	105	66
90	130	104	86	86	82	52
120	105	84	69	69	66	42

Storm Load Capacity—in lbs. per foot at 0°F.

Maximum Conductor Tension, 60% Rated Breaking Load of 40% Conductivity Copperweld Wire

Span Length Feet	No. 8 Awg (.128")	No. 9 Awg (.114")	E.H.S. (.104")	H.S. (.104")	No. 10 Awg (.102")	"12-40" (.081")
160	1.53	1.30	1.39	1.15	1.11	0.81
180	1.36	1.16	1.23	1.02	0.98	0.72
200	1.22	1.04	1.11	0.92	0.88	0.65
220	1.11	0.95	1.01	0.84	0.80	0.59
240	1.02	0.87	0.93	0.77	0.73	0.54
260	0.95	0.81	0.86	0.71	0.68	0.50
280	0.89	0.75	0.80	0.66	0.63	0.47

These tables are based on usual stringing practices for telephone conductors. The sags are neither maximum nor minimum and considerable latitude is permissible to meet local conditions or the requirements of existing construction.

The following assumed storm loadings are representative of usual telephone construction practice: Heavy loading .5 lbs. per foot, Medium loading .3 lbs. per foot, Light loading .1 lb. per foot. These can be modified to conform to the particular line.

For the higher grades of construction where National Elec. Safety Code loadings apply the storm loadings for telephone wires are approximately as follows: Heavy loading .8 lbs. per foot. Medium loading .4 lbs. per foot, Light loading .1 lb. per foot. Exact loading may be obtained from Copperweld Wire Tables E.D. 1800 by subtracting the weight of the bare conductor from the total loaded weight.

(The tables and chart in this section are based on information given in Copperweld Engineering Data E.D. 1683 and are furnished by courtesy of the Copperweld Steel Company, Glassport, Pa.)

Stromberg-Carlson Advances A. F. Gibson

Arthur F. Gibson, former assistant general sales manager of the Stromberg-Carlson Company, Rochester, N.Y., has been advanced to the position of general manager of the telephone division, according to an announcement by President Robert C. Tait.

A new vertical alignment of production divisions, each headed by a general manager, thus places Gibson

ARTHUR F. GIBSON

in full charge of the engineering, sales, and manufacture of all Stromberg-Carlson telephone and switchboard equipment.

Gibson joined Stromberg-Carlson 37 years ago as an inspector of incoming materials and a year later was promoted to the production control department. He continued in various phases of production and inspection work until 1916 when he entered the cost department. Three years later he was advanced to the credit department and in 1922 was made assistant credit manager.

Gibson became credit manager in 1929 and office manager in 1940. At that time he was also made assistant treasurer of the company. A year later he rose to the post of assistant general sales manager, a position lately abolished in the new vertical setup.

Gibson is a member of the Telephone Pioneers, Rochester Chamber of Commerce, Rochester Club, and Oak Hill Country Club. He is married and the father of two sons.

Tait also announced other appointments in the telephone division: Howard G. Strassner, production manager; Raymond E. Golemb, manager of inspection and quality control, and Henry C. Sheve, manager of government sales.

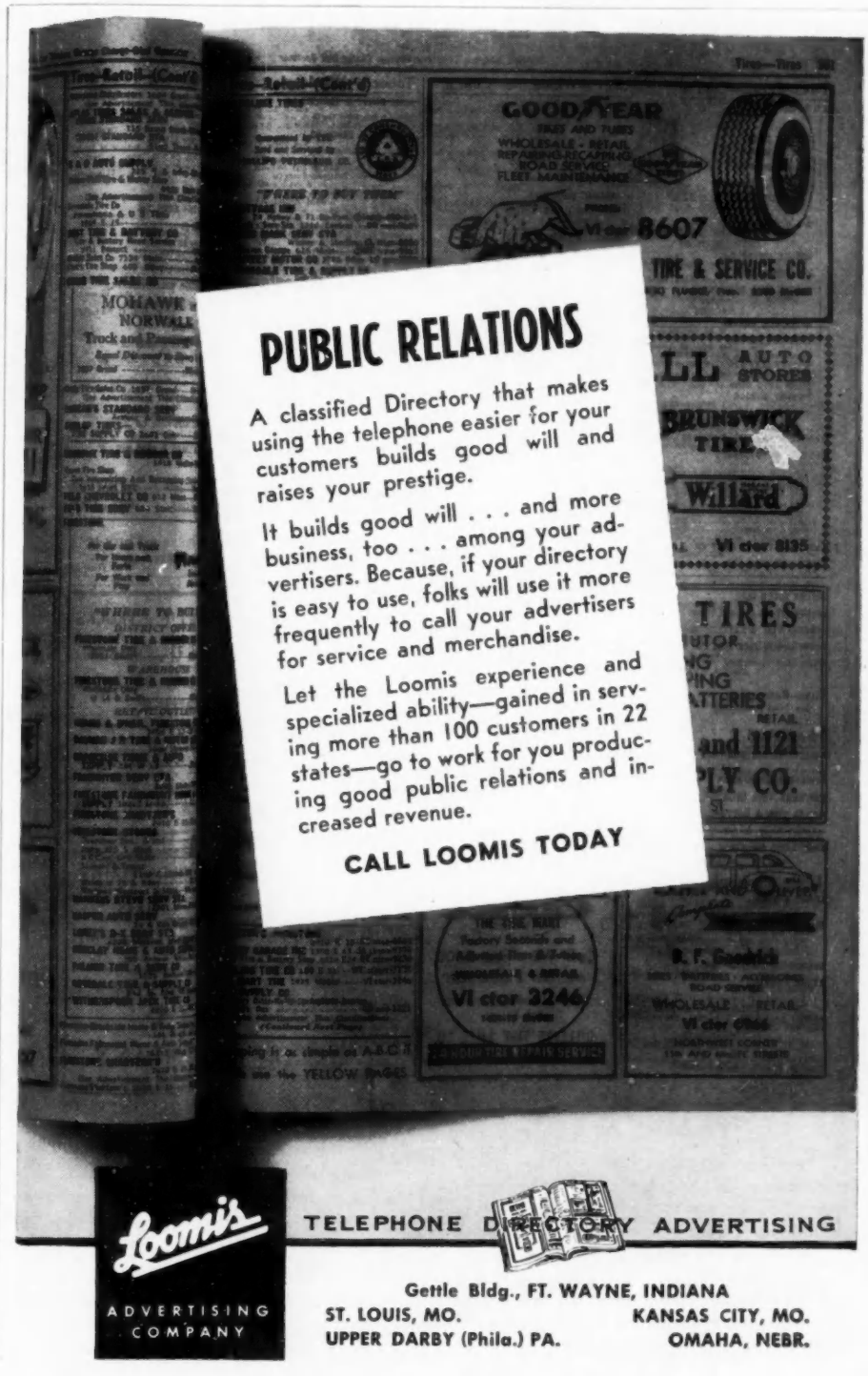
Truman C. (Tommy) Thompson continues as telephone sales manager, John H. Voss as chief telephone engineer, Ralph H. Barger as commercial sales manager, and Charles H. C. Bon as export sales manager.

"We feel certain," Tait explained, "that this new divisional organization will function more smoothly and efficiently and permit the Stromberg-Carlson Company to compete more effectively in the respective fields in which it is engaged."

New Building Started At Woodbury, Tenn.

Work has started on a new telephone office for the Woodbury, (Tenn.) Home Telephone Co. The structure will be brick veneer and was planned by engineers of the Kellogg Switchboard & Supply Co. Chicago, Ill., to accommodate the new switchboard which will be installed upon the completion of the building.

Dr. J. F. Adams, president of the Woodbury company announced that the company expects to increase the telephone users to over 1,000 within the next few years.


PUBLIC RELATIONS
A classified Directory that makes using the telephone easier for your customers builds good will and raises your prestige.
It builds good will . . . and more business, too . . . among your advertisers. Because, if your directory is easy to use, folks will use it more frequently to call your advertisers for service and merchandise.
Let the Loomis experience and specialized ability—gained in serving more than 100 customers in 22 states—go to work for you producing good public relations and increased revenue.
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Galvanized Steel* CABLE LASHING WIRE

AVAILABLE FOR PROMPT DELIVERY!

The new *Crapo* Galvanized Steel Lashing Wire (.091-inch diameter) now is available for almost immediate delivery. This improved wire has been developed especially for use with modern cable-spinning machines. It is manufactured from selected steel, carefully processed and heavily galvanized to conform, in every respect, to specifications approved by leading telephone engineers.

Crapo Galvanized Steel Cable Lashing Wire comes in neat, compact, thread-lay coils containing approximately 325 feet. Packed in cartons of 6 coils each.

Ask your Jobber or write direct!

*Crapo Cable Lashing Wire also is available in "Stainless Steel," .065-inch and .045-inch diameter.

INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA

• • •

Improved Cable Lashing Methods

•

(Continued from page 31)

•

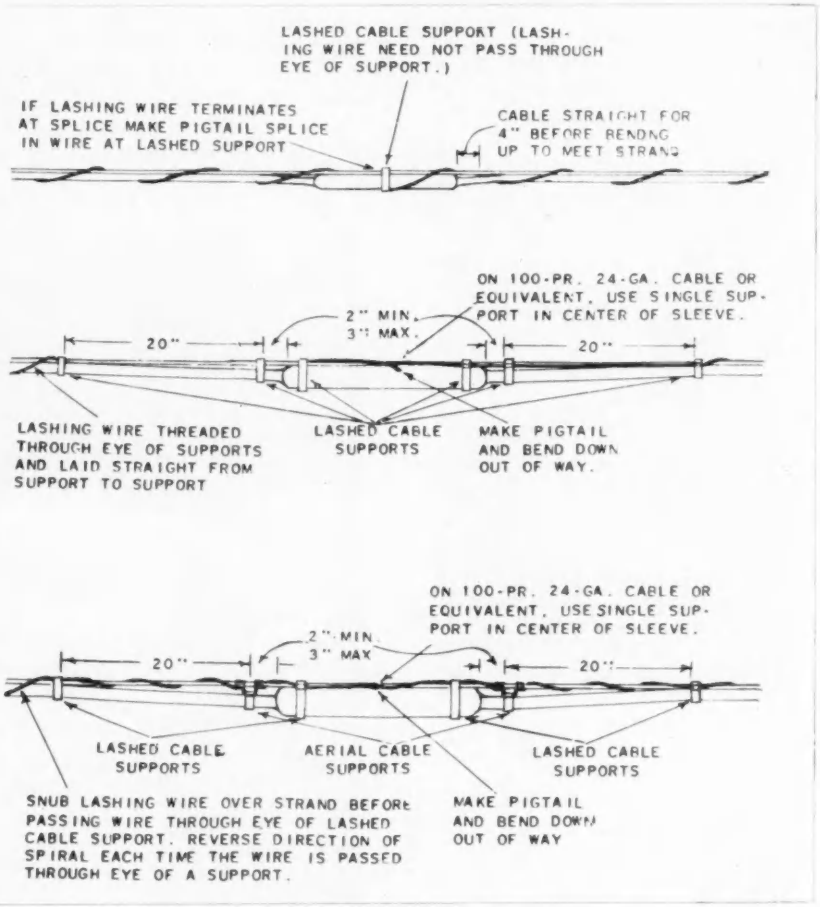

LASHED CABLE SUPPORT (LASHING WIRE NEED NOT PASS THROUGH EYE OF SUPPORT.)
IF LASHING WIRE TERMINATES AT SPLICE MAKE PIGTAIL SPLICE IN WIRE AT LASHED SUPPORT
CABLE STRAIGHT FOR 4" BEFORE BENDING UP TO MEET STRAND
ON 100-PR. 24-GA. CABLE OR EQUIVALENT, USE SINGLE SUPPORT IN CENTER OF SLEEVE.
2" MIN. 3" MAX.
20"
20"
LASHING WIRE THREADED THROUGH EYE OF SUPPORTS AND LAID STRAIGHT FROM SUPPORT TO SUPPORT
LASHED CABLE SUPPORTS
MAKE PIGTAIL AND BEND DOWN OUT OF WAY.
ON 100-PR. 24-GA. CABLE OR EQUIVALENT, USE SINGLE SUPPORT IN CENTER OF SLEEVE.
2" MIN. 3" MAX
20"
20"
LASHED CABLE SUPPORTS
AERIAL CABLE SUPPORTS
LASHED CABLE SUPPORTS
SNUB LASHING WIRE OVER STRAND BEFORE PASSING WIRE THROUGH EYE OF LASHED CABLE SUPPORT. REVERSE DIRECTION OF SPIRAL EACH TIME THE WIRE IS PASSED THROUGH EYE OF A SUPPORT.
MAKE PIGTAIL AND BEND DOWN OUT OF WAY

Fig. 4—Methods of supporting cable splice sleeves and adjoining cable. Top—50-pair, 24-gauge or smaller cable. Center—200-pair, 24 gauge or larger cable where lashed cable supports are used. Bottom—200-pair, 24 gauge or larger cable where aerial cable supports are used.

wiped joints. Where several supports are placed along the cable, they should be spaced not more than 20 inches apart in order to adequately carry the cable. Care is required in placing the supports near the wiped joints of cable splices to avoid damage to the joint. The supports must be carefully adjusted to properly carry the weight of the cable and at the same time not bend the cable at the wiped joints.

Use of Lead Shields

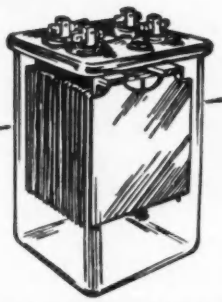
AT POINTS where there is danger that the cable sheath will be abraded by contact with a suspension or strand clamp or an irregularity in the supporting strand such as that due to a strand serving, and cable supports are not placed to maintain the separation between the cable and strand, lead shields will provide the needed protection. At turns in the cable lead, shields are also used with the cable supports nearest the corner as a precaution against the cutting of the cable sheath by the supports in case the cable is subjected to unusual strain at the turn later on.

—To be concluded in the October, 1949 Fortnightly Telephone Engineer.

Central Tel. Completes Blencoe, Ia., Cutover

An automatic system has been installed and is now in operation in the Central Iowa Telephone Co. exchange at Blencoe, Ia. The company also plans automatic service at its exchanges at Little Sioux, Mondamin and Modale.

5 reasons why your best POWER SUPPLY is GraybaR



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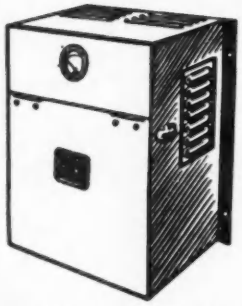
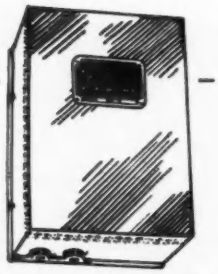
2 EVEREADY COLUMBIA GRAY LABEL DRY CELLS — the long-lived Eveready cells for local battery service.



3 BATTERY CHARGERS — your choice of Electrox, Flotrol, General Electric, or Raytheon.



4 RINGING MACHINES — Lorain Sub-Cycle for straight-line ringing; Holtzer-Cabot or Leich for harmonic ringing.

5 GRAYBAR SERVICE — prompt deliveries from our near-by warehouse — plus the free help of a Graybar Telephone Specialist in solving any problem you may have.

The items shown here are typical in quality of the hundreds of telephone supplies which you can get from Graybar. Next time you want information on *any* power supply item or *anything* electrical, call Graybar. You'll get quality products and dependable service. *Graybar Electric Company, Inc. Executive offices: Graybar Building, New York 17, N.Y.* 4922

Everything in Telephone Supplies
Via GraybaR

IN OVER 100 PRINCIPAL CITIES

(Continued from page 38)

in ten-below-zero weather trying to run down an elusive high-resistance connection does not come under the head of "pleasant outdoor recreation". (*See Figure* 6.)

It is, of course, not feasible to replace every hand-made splice with one of the compression type, however, many of the potentially bad joints can be spotted by walking along the line and carefully scanning all splices, using a pair of field glasses to sharpen up the vision. Span joints which appear weak or bad should be cut out and replaced with properly applied compression sleeves. Connection at all corners and junction poles should be inspected, particularly where jumper wire is used. Make sure that test connectors are tight and if feasible, replace these connections with compression split sleeves. As this writer has stated many times, it is physically impossible to make good permanent low resistance connections by simply wrapping jumper wire around the line wire, yet thousands of junction poles still employ this antiquated method of connection. Test connectors, if properly applied, will give a good satisfactory low resistance connection but, unlike Caesar's wife, are always subject to suspicion. (*See Figure* 7.)

Check Points For The Inspector

THE FOLLOWING list of inspection items represent principal items which should be looked for on an overall inspection repair trip:

Cable Plant

Missing rings; broken lashing wire
Bad excessive bowing
Ring wear
Poor tree clearance
Excessive pull at corners and terminal legs
Inadequate clearance from light wires
Unsupported sleeves
Crystallized sections of cable

Open Wire—Cable—Drop Wire Plant

Poles loose, broken or leaning
Poles split by lightning
Poles badly out of line
Poles cut out by highway grading
Missing or inadequate guys
Broken or rotten pins and cross-arms

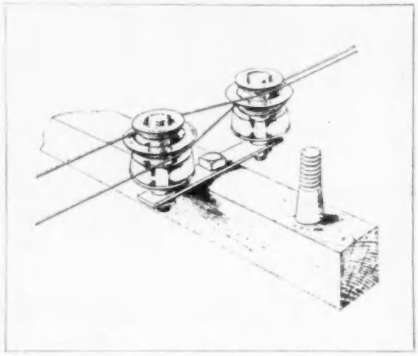


Fig. 8—Use of tandem fixture in connection with R-1 transposition system.

Cross arm braces pulled out or missing
Weak corner and junction poles
Defective line wire joints and junction pole jumper connections
Inadequate clearance of wires over highways or under power wires
Unbalanced load on poles
Floating and broken insulators
Dead branches above lead
Inadequate transposition scheme
Incorrect sag

Reduction Of Power Noise

MANY COMPANIES now find themselves with abnormally high noise levels due to extensive parallels with REA lines. The change in noise levels have been so gradual that in many cases no specfic remedies have yet been applied. Assuming metallic lines, the primary remedies are: (1) Adequate transpositions; (2) good electrical balance in line wires; and (3) the use of C. O. equipment which does not upset the longitudinal balance of the telephone lines.

The problem of transposing rural lines to minimize cross talk and inductive interference is relatively simple. The lines involved are usually sufficiently short to permit fairly effective balance from both a cross-talk and an inductive interference standpoint by merely transposing adjacent circuits at non-adjacent points. For example, wires 1-2 of a four-wire circuit would be transposed at the quarter-mile point, wires 3-4 at the half-mile point, etc. A complete cross-talk balance between all wires

(Please turn to page 70)

STROM
long life
telephone dry cel
"Eveready" "Columbia" "Gray Lab
• Higher sustained voltage • Lo
er life • Rock-bottom econo
These qualities, more import
now than ever before, are assu
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Made by the makers of "Evereac
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The quality cell preferred b
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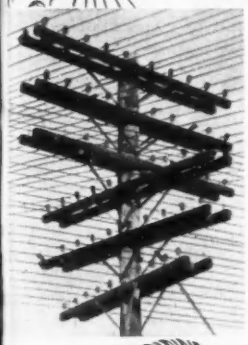
STROMBER
STROMBERG Telephone CARLSON
TELEPHONES, SWITCHBOARDS •

...BERG-CARLSON recommends...

"dependable" *means both the trade-mark & the guarantee of cross-arms by* American Cross-Arm Inc.

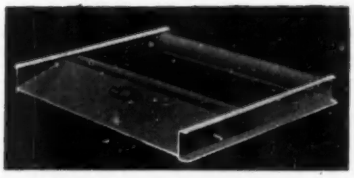


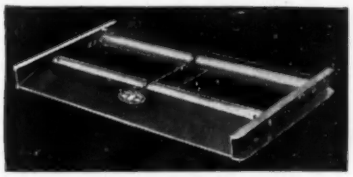
The finest pole and wire installation is useless if cross-arms fail. "Dependable" Cross-Arms are all that the name implies—made of sturdy, American woods, long seasoned, fashioned and finished to stand every weather condition from desert heat to mountain blizzards.

In Douglas Fir—Creosoted Yellow Pine or Gulf-Red Cypress.

roll-a-reel

handles heavy reels quickly, economically, and safely





STYLE A (top) Width 30″; Depth 28″; Height 3½″. Weight, 50 lbs. Capacity, 2000 lbs. Supports up to one 28″ wide reel.

STYLE B (below) Width 52″; Depth 28″; Height 4″. Weight, 110 lbs. Capacity 4000 lbs. Supports two 24″ wide reels or up to one 48″ wide reel.

- Sturdily built, with heavy gauge steel frame to roll reels of wire, cable, steel strand or ropes.
- Separate sets of rigidly aligned ball-bearing rollers for each side of the large reels. No slipping or friction between rollers and reel.
- Ball-bearing rollers are at same level, so that cable can be safely taken from front or back, top or bottom.
- Amazingly low cost.

cook type 0 *sub-station protector*

This single circuit protector, equipped with fuses and lightning arresters, is unexcelled for either indoor or outdoor use. Special Cook-engineered features include:

1. Heavy white glazed porcelain designed to prevent surface leakage between current-carrying parts.
2. Tru-Gap high-potential dischargers that will not ground the line.
3. Phosphor bronze fuse and arrester springs, zinc hood, Everdur studs and washers. Hood is grounded when in place.
4. Choice of types and lengths of Cook Telephone Fuses.

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...ranch Offices: Atlanta 3, Chicago 6,
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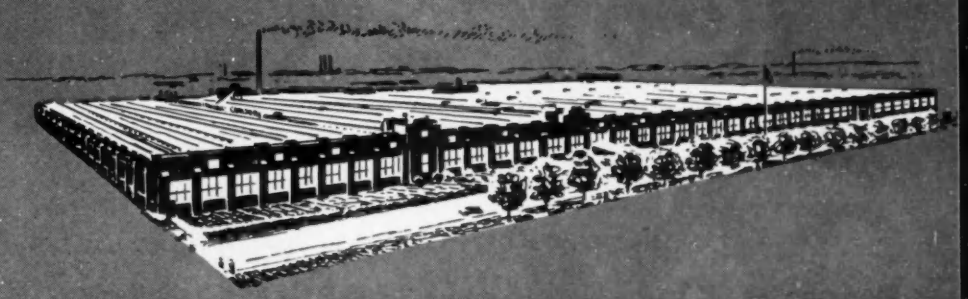

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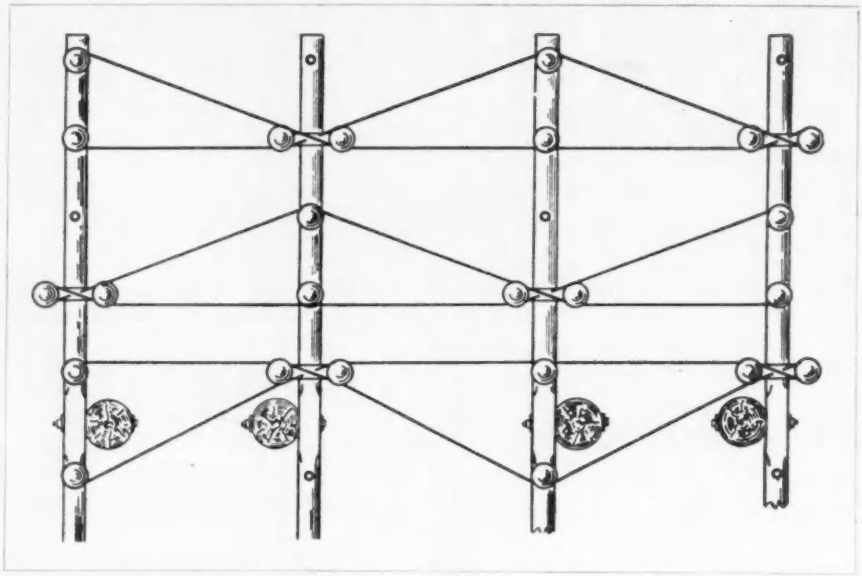


Fig. 10—Plan view of R-1 transposition.

of a multi-wire rural lead must take into account the balance between non-adjacent wires and will require the use of a standard transposition scheme such as the type N scheme designed for rural and short haul minor toll lines.

Bell System R-1 Transposition Scheme

THE BELL SYSTEM R-1 transposition scheme is particularly effective in keeping induced noise on heavily paralleled rural lines at a minimum. This scheme is useful on rural leads up to forty wires, however, for most rural leads only ten wires or less are involved. Unlike other transposition schemes commonly employed, it is not necessary to divide the line up into equally spaced sections. *The design consists essentially of transposing each pair at every other pole.*

Transpositions on horizontally or vertically adjacent pairs are staggered so as to fall on different poles. For example, wires 1-2 would be transposed on, let us say, pole 201, 203, 205, etc., while wires 3-4, would be transposed on poles 200, 202, 204, etc. If more than a single cross-arm is involved, wires 11-12 would be transposed on poles 200, 202, 204; wires 13-14 would be transposed on 201, 203, 205, etc. Control of cross-talk between pairs not horizontally or vertically adjacent is accomplished by the omission of certain transpositions on each 25th pole.

To reduce the cost of the frequent transpositions required by the R-1 scheme, the transpositions are usually made on double groove insulators if the spans are not longer than 150 feet. Tandem type transposition fixture consisting of two deep-groove insulators and a break iron are used on the longer spans as shown in *Fig.* 8.

Ties are not ordinarily required on the tandem fixtures except over railroads, highway crossings, or at corners where the pull is excessive. *Fig.* 9 illustrates the general features of the R-1 scheme. This illustration shows the transposition pattern for normal odd-numbered and even-numbered poles. But at the 25th, 50th, 75th and 100th poles, a special pattern is employed which consists in omitting some of the transpositions. A plan view of an R-1 transposition for several circuits is shown in *Fig.* 10. It will be noted that the transposition insulator or tandem bracket is always mounted on the pin position towards the pole. On straight sections of line the wires at the intermediate poles between transpositions are tied on opposite sides of the insulators. At corners the wires are placed so as to pull against the insulators. The transpositions are thrown into the wires by simply untieing all of the existing wires and rolling the wires first in one direction and then the other to affect the desired transposition pattern.

Rural Station Inspection

THIS ARTICLE is primarily concerned with plant construction and maintenance but in connection with the fall maintenance program the need for station inspection should not be overlooked. This is particularly true of those stations located at a considerable distance from the central office, and on poor roads.

Magneto telephones, particularly those far out on the line, have the annoying habit of developing trouble when the weather is at its worst. The few minutes spent on inspection, adjustment, and repair of these "hard-to-get-at" rural stations in the fall may save a tedious trip during the cold winter weather. A station inspection, properly made, will uncover a surprising amount of potential trouble. The first part of the inspection should consist of a careful check of station wiring, ground connection and protector. Look for loose connections: wires improperly attached

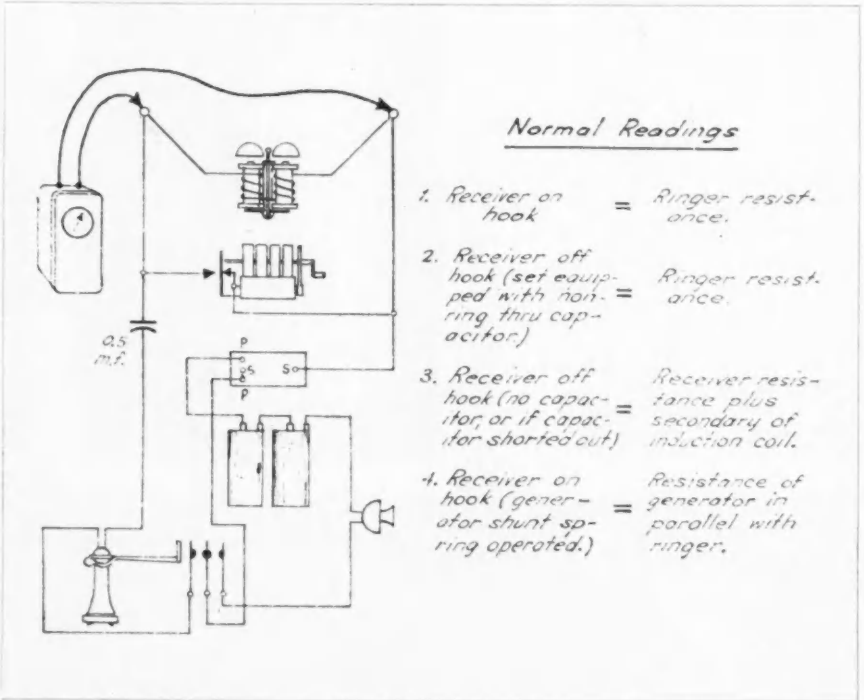
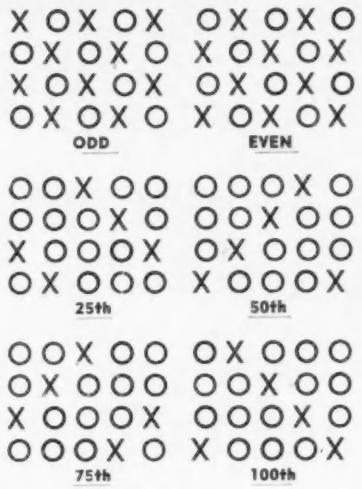

Normal Readings
1. Receiver on hook = Ringer resistance.
2. Receiver off hook (set equipped with hon-ring thru capacitor.) = Ringer resistance.
3. Receiver off hook (no capacitor, or if capacitor shorted out) = Receiver resistance plus secondary of induction coil.
4. Receiver on hook (generator shunt spring operated.) = Resistance of generator in parallel with ringer.
.5 mf.
P
S
S
P

Fig. 11—Use of ohmmeter to check electrical conditions in magneto telephones.

Fig. 9—Transposition pattern of Bell System R-1 scheme.



Note—X shows transpositions. O shows absence of transpositions.

to the surface over which they run; dirty protector blocks; and faulty attachments of drop-wire to the building.

The instrument inspection should consist of a visual and an electrical check. The following procedure is suggested:

(1) Remove receiver from hook and listen for line noise. Shake receiver cord and listen for cut-outs. Signal operator and have her report on outgoing transmission. Note incoming transmission.

(2) Remove receiver cap and diaphragm. Blow dust out of coil cup. Note condition of diaphragm and if unsatisfactory replace; check diaphragm for proper pole piece clearance.

(3) Short out the instrument line terminals and note volume of sidetone in receiver. This test gives a fair check of outgoing volume transmission.

(4) Check batteries and replace if necessary.

(5) With one side of the line disconnected at the telephone, connect an ohmmeter (*See Figure* 11) to terminals L_1 and L_2. With the receiver on the hook note ringer resistance. Remove receiver from hook and note whether the non-ring through capacitor is shorted. Turn the generator crank handle so shunt spring assembly engages. Note if its contacts open and close properly. Short non-ring through capacitor and note whether receiver hook switch contacts open and close properly. Burnish all contacts and adjust spring tension if necessary. Oil generator armature & crank bearings. THE END.

The man on the pole will tell you—

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If you know linemen, you know they want the finest in quality when it comes to equipment. Not only does their job depend on it—many times their lives do.

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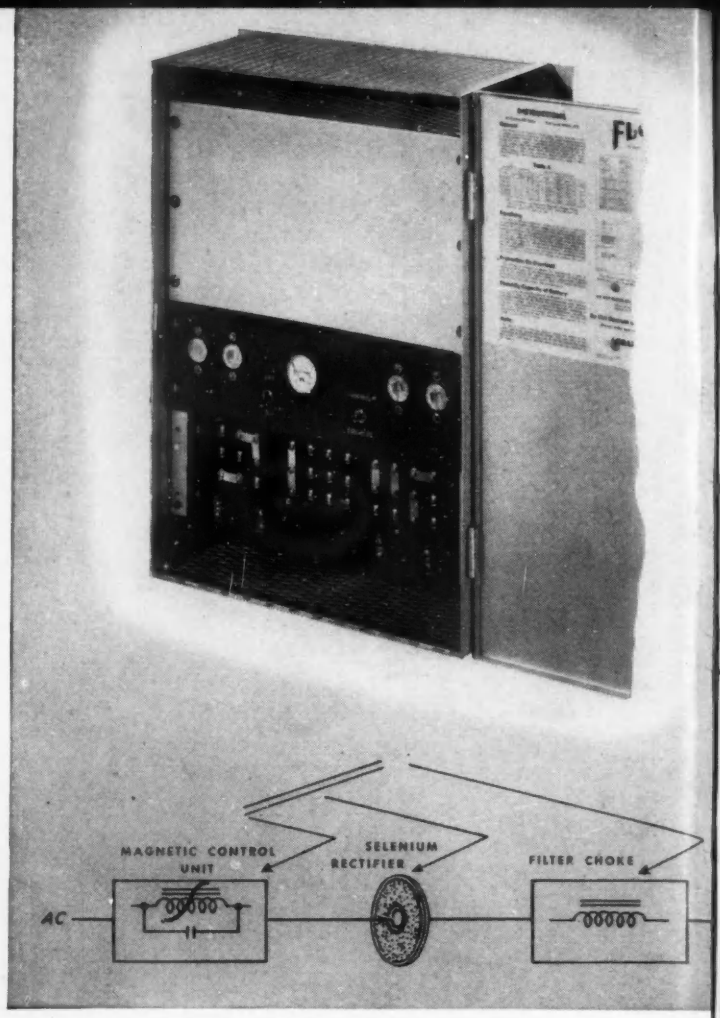

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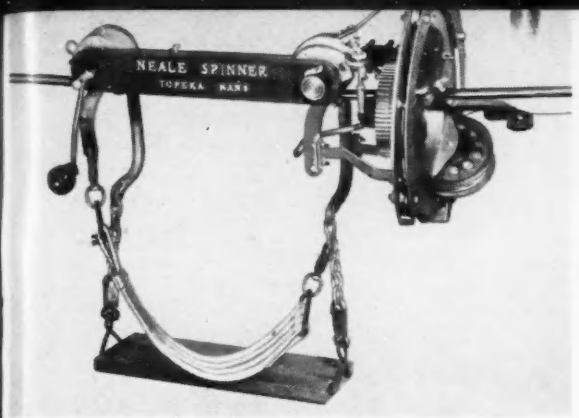
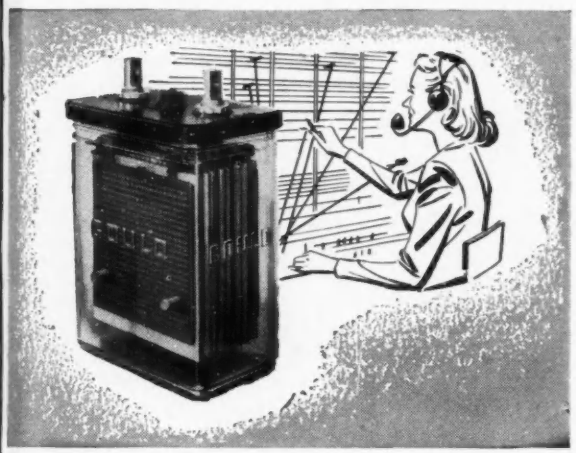
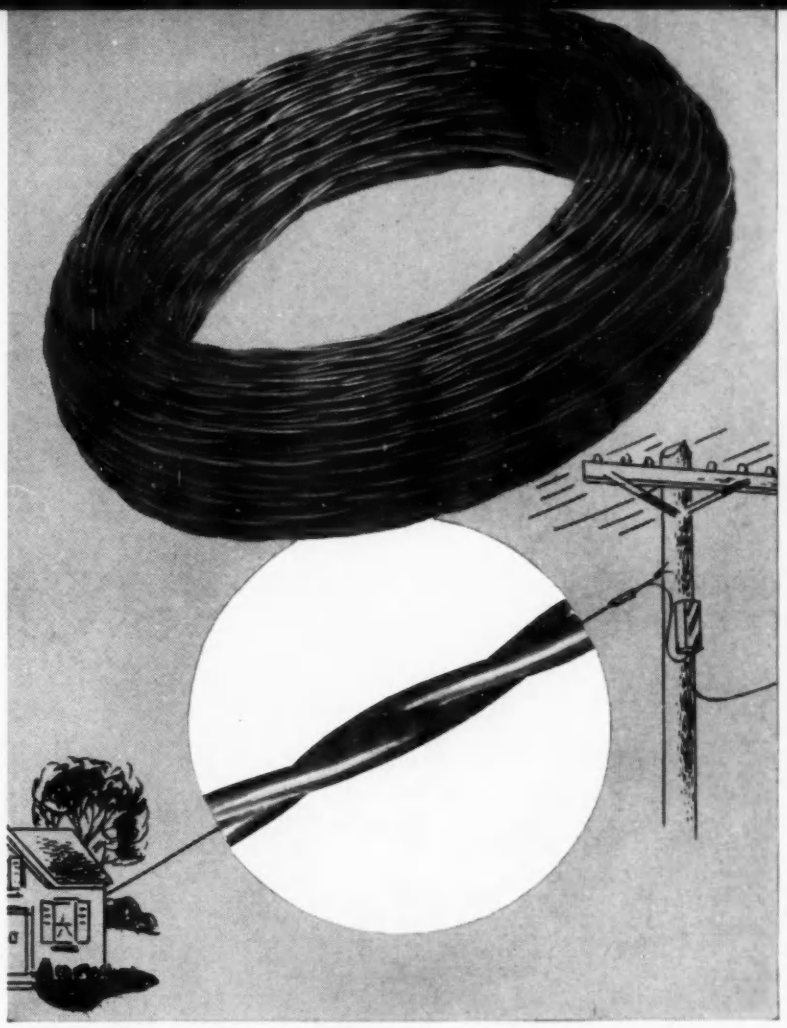


Longer Cable Life and Less Maintenance results from spinning with the Neale Model "B" Cable Spinner. Designed for one-man use, may be operated by hand crank or pulled along from the ground. Made by CABLE SPINNING EQUIPMENT CO., it's accessories include storage chest, seat and safety belt.



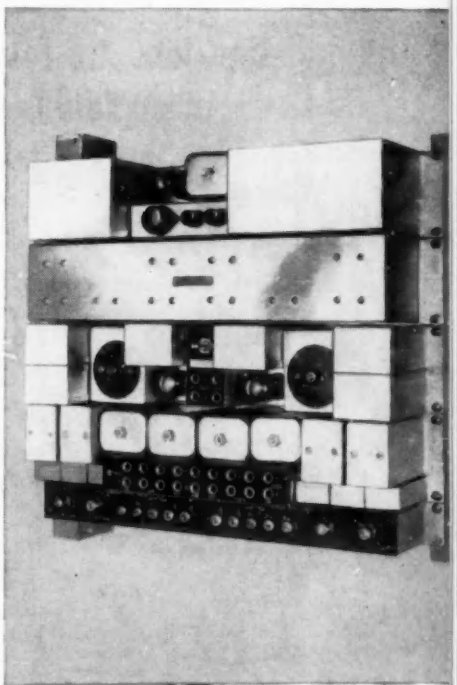
Outstanding Battery Performance is yours when you choose Gould Planté Batteries. Thick, grooved, pure lead positive plates give an amazing number of years of trouble-free service! Made by GOULD STORAGE BATTERY CORP., for telephone men, they're the finest stationary batteries money can buy.



Drop Wire Lasts 30% Longer! GENERAL INSULATED WIRE WORKS Bronze DropWire lasts longer because it's drawn of solid, non-corrosive, high-conductivity bronze and covered with Neoprene—the tough insulation that stands hardest use. This wire is easier to handle, too, for it combines high tensile strength with great flexibility.

Sealed against Trouble! Communication equipment manufacturers demand Kester Plastic Rosin-core Solder, because it makes a perfect seal. Prevents high-resistance joints and intermittent open-and-closed circuits. Avoid trouble with KESTER SOLDER COMPANY solder.

Save Three Ways... on materials, man-hours, and maintenance, with INDIANA STEEL & WIRE CO'S Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, it's protected with a heavy, ductile, tightly-adherent coating of zinc.



For Strong, Clear Toll Transmission and a quiet circuit, use the Kellogg Repeater. New, sharp cut-off filter aids in obtaining maximum usable gain. Important features are "unit" construction and ease of adjustment. Made by KELLOGG SWITCHBOARD AND SUPPLY COMPANY.

"How To Do It"

(Continued from page 49)

the object as nearly straight up as is possible.

Keeping his back straight, he should get down by bending his knees and raise the object gradually by straightening his legs. Thus, the brunt of the strain is placed on leg and shoulder muscles.

Women sometimes find this stance uncomfortable as it throws them off balance. If so, it will perhaps be easier for them to get down on one knee to handle the object, but the actual lifting should still be done by straightening the knees.

The load should be carried as close to the body as possible and near to the worker's center of balance. The carrier should have unblocked vision ahead, of course, and the load should not interfere with his normal walking gait.

Very heavy objects should be lifted with mechanical equipment or by a "team" of workers. In "team" lifting the efforts of the various workers must be completely coordinated and directions should be given by one person only.

Alertness Holds Key To Safety

WE ORDINARILY don't think of accidents in terms of weariness but without doubt it is one of the most important factors in the safety picture, whether in the plant, in an automobile, or at home.

Alertness holds the key to safety. The flicker of an eyelash, the quick movement of an arm, the instantaneous flash of a danger signal to the brain . . . these might very well mean the difference between a serious accident and none at all, between death and life itself.

If your muscles and nervous system are tired they just don't react quickly. It's only natural. An extra fraction of a second may elapse when you try to evade a falling piece of steel—just enough to allow it to fall on your leg or arm. Your eye may see another car heading into yours just a moment too late—and there's an accident that ordinarily could be avoided.

The best answer, of course, is to *get plenty of rest* and *keep from getting tired.*

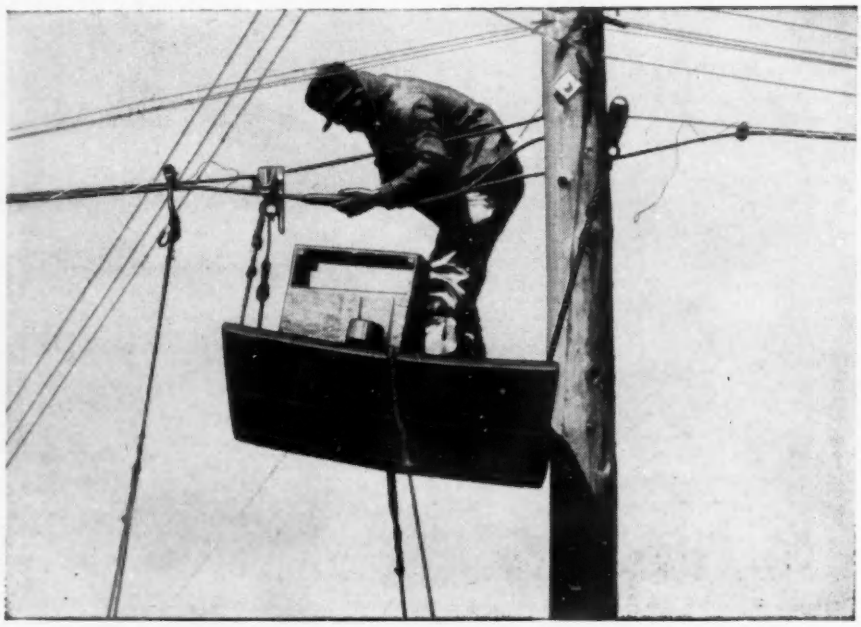
But if you are tired—and almost everyone is at one time or another—it's important that you make an extra special effort to be "*on your toes*" when you're in a position of possible danger . . . it's important to make sure you're always "*on the alert.*"

Cable Spinning At Nebraska City

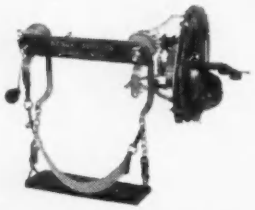
ANOTHER step in the evolution of aerial cable construction methods has taken place in the last few years with the development of the cable spinner. Old-timers of the business were skeptical at first of the innovation, but most of them have now become firm supporters. The machine is pulled along the messenger as the cable is strung into place and automatically lashes them firmly together. Linemen no longer ride the strand between poles, but are obliged to climb up to lift the spinner around each pole.

The photo (page 76) was taken

(Please turn to page 76)



Line Jobs Are Easier . . . Safer . . . Less Costly When Your Crews Are Properly Equipped



Neale Model B One-Man Cable Spinner Operates from ground or strand.

Performance pays off—that's why more and more independent telephone companies are specifying Cable Spinning Equipment Company precision engineered tools for their crews.

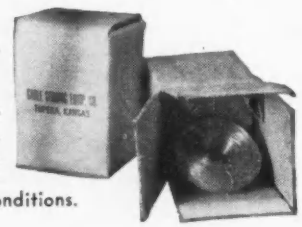
And Cable Spinning Equipment Company accessories help linemen work faster and in greater safety—thereby cutting your construction, maintenance and repair costs.

There's a complete line to choose from. Ask your jobber today to show you how Cable Spinning equipment can help you save money.

Molded Lead Shield Gives more protection at the pole.

For BEST RESULTS . . Use NEALE Wire!

Available in seven different types and sizes, famous NEALE Spinning Wire meets the toughest construction and corrosion conditions.



CABLE SPINNING EQUIPMENT CO.

TOPEKA, KANSAS Phone 3-1829

"Your voice sounds wonderful, darling"

That remark sounds wonderful to us, too, because it could be prompted only by *good telephone service.* As a manufacturer of many kinds of telephone equipment, Western Electric contributes toward giving the service people like. Thus, we share with the nation's telephone industry the satisfaction of the young man above. Speeding her voice to him so clearly, so naturally, is something to be proud of. *Good telephone service* like this gives people a lot of satisfaction.

Western Electric

TELEPHONE APPARATUS AND CABLE

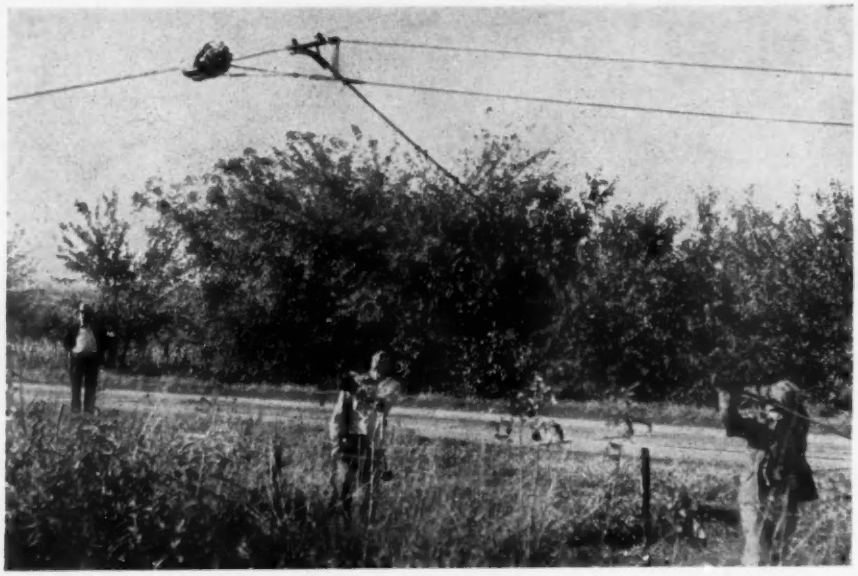


Fig. 5—Lincoln T. & T. Co. area manager Ojers at left is becoming a spinner convert as he lends a critical eye to its performance. Louis Ottnat, lineman, and R. C. Boling, construction foreman, are adjusting the spinner.

when a new farm cable was placed south of Nebraska City last fall by the Lincoln (Neb.) T & T Co. Photo was furnished through the courtesy of the Lincoln Telephone News.

Tel-e-lect Adds Products To Pole Equipment Line

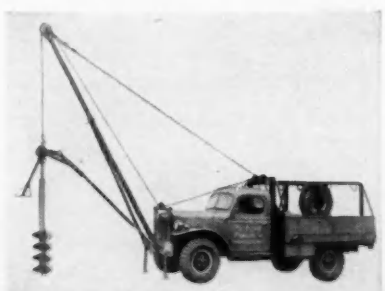
Tel-E-Lect Products, Inc., 10013 Minnetonka Blvd., Minneapolis, Minn. are best known for the pole hole digger that attaches by a single bolt to a derrick truck. Available auger sizes now include diameters from 8" to 20", and are adjustable for clean holes to 10 ft. deep. However, the company recently announced three new products:

(1) *Winch Drive Box.* This is operated by a single lever in the cab to allow the truck operator to raise, lower or stop the winch. He simply moves single lever forward or backward during the time the power take-off is running. It does away with shifting the take-off from forward to reverse and it needs no truck clutch operation in its use. It allows the operator to concentrate on the work his winch is doing rather than on the controls necessary to operate the winch. As optional equipment, a selector is available for use with a double drum winch. With this, the operator in the cab can raise or lower either the winch line or the derrick instantly and with a single lever.

(2) *Derrick.* Now available are both the "T" type and the conventional middle leg "A" frame derricks for front or rear mounting on all makes of trucks.

(3) *Utility Cabinets.* Steel bolt-on cabinets and material racks are designed for any flat bed truck. Racks provide space for carrying the derrick, hand tools, pike poles, etc. Cabinets contain adjustable hooks for materials, trays with adjustable dividers, dome lights and other advantages. Tarp coverings weather-proof the inside bed of the truck.

Complete description of all of these accessories is available from the manufacturer.



Dodge Power Wagon with Tel-E-Lect equipment.

Your Ideas May Help The Other Fellow

MAYBE you have found the answer to a tough problem or perhaps you are still sweating it out but have at least explored and eliminated some of the blind alleys. Why not outline your problem with its solution and send it to *Myrle Shafer's "How To Do It" Department, Telephone Engineer Publications, 7720 North Sheridan Rd., Chicago 25, Illinois?* Your problem and its solution may help many other telephone men —and besides we'd just like to hear from you—what you're doing—the plans you're making, etc. *So drop us a line sometime.*

STROM

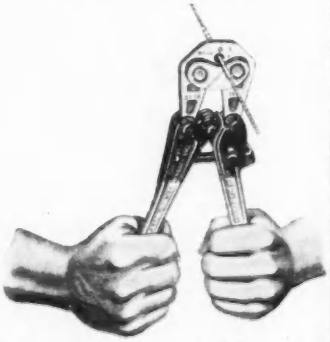
make line splices faster with nicopres splicing sleeves . .

For line splices that *can't* pull out, m in half the time, specify *Nicopress* Sp ing Sleeves!

Nothing could be simpler than makin splice in a jiffy with *Nicopress* equipm Here's all you do:

1. Clean the wire end

2. Insert wire in sleeve



3. Compress sleeve with *Nicopress*

The result is a splice that will hold up the life of the wire. Specify *Nicopres* the finest in Splicing Sleeves!

STROMBERG

STROMBERG Telephone CARLSON

TELEPHONES, SWITCHBOARDS

...BERG-CARLSON recommends...

for accurate and rapid wire stringing or checking USE the dillon dynamometer

There's no guessing or uncertainty when a scientific Dynamometer is used to check wire tensions. *Easy* to use, *easy* to read, dead accurate. Works on new leads going up or *old* leads long established. Hundreds of satisfied owners in telephone and power fields. Reasonably priced. Decide *now* to save time and money with this useful tool. Prices on request.

reversible • weatherproof

reliable "RU" cable terminal

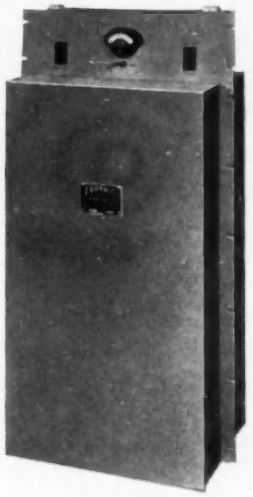
The results of Reliable's policy of endless research and testing of parts and materials, together with a rugged design simplicity are apparent in this Reversible, Unprotected Terminal.

The flat fanning face plate, in combination with a sturdy non-corrosive aluminum cover which surrounds the wires both front and back, creates an unusually weatherproof terminal.

The reversible sliding aluminum cover also permits stub to be mounted at either top or bottom.

Such other features as: detachable mounting bracket; cast cable chamber; guide rings for jumpers; beveled washers; perfect sealing nozzle, etc. add greatly to the installation and service convenience of the Reliable "RU" Terminal, as well as providing an assurance of service life beyond actual field requirements. Ask for complete information on sizes and prices.

"Reliable" identifies the quality



Model 1200 B
Single Phase
24 Amps.
50 Volts

flotrol

automatic battery chargers

SUPERIOR IN 5 WAYS:

1. **ECONOMY:** Experience has proven FLOTROL can save on power costs up to 20% per year.
2. **DEPENDABILITY:** Mechanical failures are cut to next-to-nothing because FLOTROL has no moving parts.
3. **RESPONSE:** FLOTROL answers load needs *instantly*—keeps battery fully charged at all times.
4. **LIFE-SAVING:** FLOTROL works while your battery rests—gives any battery longer life.
5. **SAFETY:** Automatically limits current to safe value on overloads.

FREE! Write for Bulletin 137, a complete catalog of FLOTROL, its technique, and its models.

...BERG-CARLSON

Factory, General Offices: Rochester 3, N.Y.
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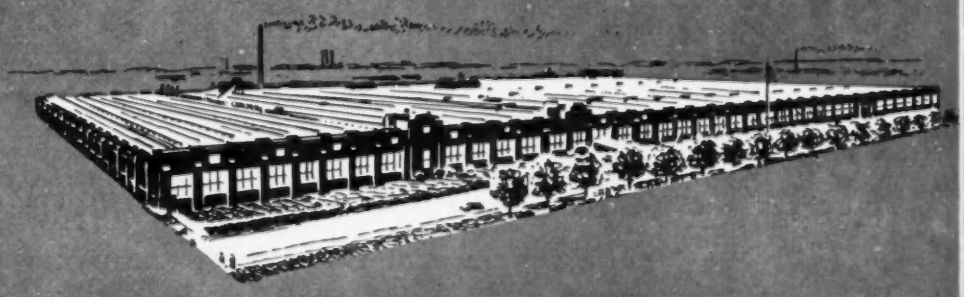

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Get your compressor power for less . . . use a lightweight, portable Smith Air Compressor! Big enough to operate medium weight rock drills, paving breakers, clay spades and tampers. Small enough to be towed at truck speeds from job to job. Capacity 60 cu. ft.

Priced far below standard compressors of equal capacity. Ford Motor and standard parts . . . serviceable at Ford garages everywhere. Uses only 1 gallon of gasoline an hour. Automatic unloading and idling. No couplings, belts or gears.

Write for complete information about the Smith Compressor . . . no obligation.

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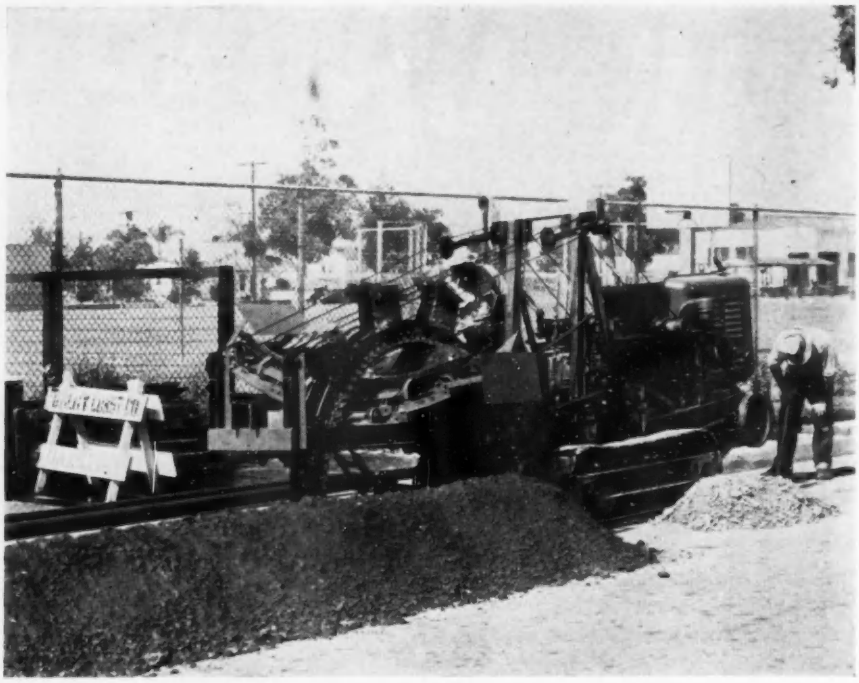


New, small, compact model of Cleveland "Baby Digger" allows easy maneuvering in tight places and quick moves from job to job on its own rubber-tired, tilt-bed, electric-braked trailer.

New "92" Cleveland Trencher Announced

Engineered to fit the new, present-day needs of contractors, utilities and municipalities, a new, small compact model of the Cleveland "Baby Digger" trenching machine has been placed on the market by The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio. Known as the *Baby Digger Model* "92", the new Cleveland is especially adapted for gas, water and sewer house services, for telephone and power cable and conduits, for house and building footings and for airport, highway and farm drainage and irrigation.

The manufacturer states that the chief advantages of the new "92" are its small compact modern size—allowing easy maneuvering in tight places and quick moves from job to job on its own rubber-tired tilt-bed electric-braked trailer—and its ditch capacities (up to five feet deep and 10 to 20 inches wide). Other new features are: absolutely clog-proof crawler tracks; operator-controlled power-shift conveyor giving instant control of the spoil bank; patented "Presto-Points" for quick and easy replacement of rooter teeth; and a crumbing shoe giving perfect grading and clean trench bottom, and which can be swung up and away to permit digging right up to foundations, walls and trees.

In addition all the time-proved Cleveland features are retained, including the well-known "Unit Construction" allowing quick and easy field repairs.

For an illustrated folder giving full details and specifications on the "92", write to The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio—ask for Bulletin S-53; or write direct to Free Literature Department, Telephone Engineer Publishing Corp., 7720 N. Sheridan Road, Chicago 26, Ill.

J. C. Vandine Offers New Service Plan

In an effort to better serve the Independent telephone industry, Telephone Installation Services, 810 Washington Bldg., Louisville, Ky., now offers a new and entirely different service in connection with maintenance of central office equipment.

J. C. Vandine, of Telephone Installation Services, states the new service is offered on a regular basis as may fit the need of the various companies and is designed to meet their particular requirements where local forces which have been trained in maintenance of line and station equipment are sometimes not in position to adequately handle switchboard and associated trouble.

Mr. Vandine comments that there is "a great need, in the Independent field, for an organization capable of and responsible for correct diagnosis and clearing of not only ordinary troubles but also those that are baffling and are of a nature requiring an expert technician."

J. C. VANDINE

In order that Telephone Installation Services may properly go into detail in connection with each office, two steps are necessary: (1) Office will be inspected for maintenance requirements and, (2) following such inspection a definite arrangement may be made as to the amount of work to be performed and the frequency thereof.

Mr. Vandine states that the first visit to any office will entail much more work and the necessary tests to be made will constitute a large portion of the time. However, on return visits the time element will be considerably reduced.

"It is felt," he said, "that this service can be invaluable to the smaller operating companies and through the resources available to Telephone Installation Services, replacement parts as well as new equipment may be obtained with a minimum of delay. From an operational viewpoint there has always been and will continue to be a laxity in switchboard maintenance. This condition is not due to any desire on the part of management, but is due entirely to the lack of switchboard experience on the part of the person in charge of equipment in any specific office . . ."

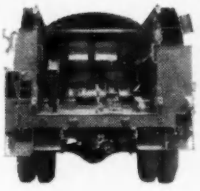
Cannon Electric Appoints New Representatives

The Harris-Hanson Co., 208 N. 22nd St., St. Louis, Mo., has been appointed to represent Cannon Electric Development Co., Los Angeles, Calif., in the central and eastern portions of Missouri and central and southern Illinois.

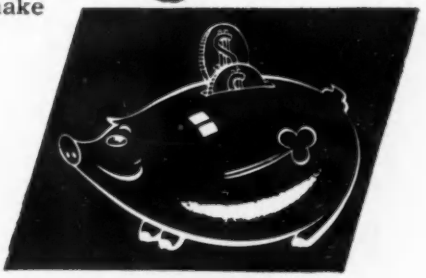
The Harris-Hanson Co., will represent Cannon Electric on all electric connector type series and signal equipment specialties.

the SAVINGS in LOWER Maintenance costs by using YORK-HOOVER BODIES is just like EXTRA MONEY in the BANK

Model LCW-102



This light construction body is furnished with complete working equipment. Built in crew compartment provides maximum protection—adequate space is provided for all materials and tools—contributing factors which make the LCW-102 a profitable investment for you.



Write for the LCW-102 "facts" today!

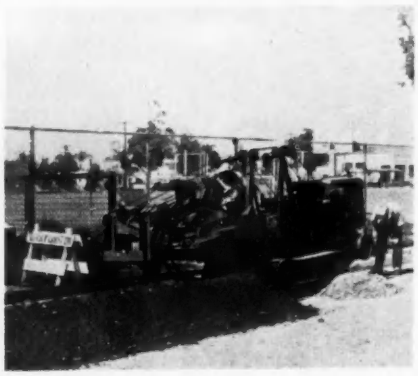
YORK-HOOVER BODY DIVISION CORPORATION

YORK, PENNA

ADDITIONAL Information on New Products or Service and Supplies of any Advertiser listed in this section may be promptly obtained by filling out the handy request for more information reproduced on the opposite page. All items are numbered. Check number of items on which more information is desired and send to Telephone Engineer Publications. Kindly mention Telephone Engineer Publications when contacting advertiser direct.

the New Products Showcase

New Products & Supplies of Practical Interest



New Cleveland "Baby Digger Model 92" trenching machine is especially adapted for telephone and power cable conduits. The manufacturer states chief advantages of the new "92" are: (1) its small compact, modern size allowing easy maneuvering in tight places and quick moves from job to job on its own rubber-tired, tilt-bed electric-braked trailer; (2) its ditch capacities (up to 5 feet deep and 10 to 20 inches wide).—Check New Product 165.

ADVERTISING, Directories—General Telephone Directory Co., 604 Pine Ave., Long Beach, Cal., and 185 N. Wabash, Chicago, Ill.—**[ADV. 4]**

ADVERTISING, Selling—Telephone Directories—L. M. Berry & Co., Hulman Bldg., Dayton, Ohio.—**[ADV. 5]**

ANCHORS. Albion Malleable Iron Company, Albion, Mich.—**[ADV. 6]**

BATTERIES, Dry Cell—The Ray-O-Vac Company, 2317 Winnebago St., Madison, Wisc.—**[ADV. 7]**

BATTERY—WATER UNITS (Demineralizers For Tap Water—A. E. Tomkin & Co., 1828 Columbia Rd. N.W., Washington 9, D. C.—**[ADV. 8]**

BELTS — CLIMBERS — COMPLETE LINEMENS' EQUIPMENT, W. H. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.—**[ADV. 9]**

BELTS—CLIMBERS—Miller Equipment Co., Inc., Franklin, Pa.—**[ADV. 10]**

BOOTHS—Acoustic Telephone—Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N. Y.—**[ADV. 11]**

BOOTHS—Churchill Cabinet Co., 2119 Churchill St., Chicago 47, Ill.—**[ADV. 12]**

CABLE, All Plastic, Aerial, Duct, Direct Burial, PBX, Switchboard.—The Ansonia Electrical Co., Ansonia, Conn.—**[ADV. 13]**

CABLE SPINNING—The Cable Spinning Equipment Company, 432 Crane St., Topeka, Kans.—**[ADV. 14]**

CABLE TERMINALS—Channell Splicing Machine, 2415 Roanoke Rd., San Marino, Calif.—**[ADV. 15]**

CORDS, Instrument and Operators—Commermercial Cord & Supply Co., 26 Main St., Clifton Springs, N. Y.—**[ADV. 16]**

CORDS, Switchboard & Telephone—Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.—**[ADV. 17]**

ELECTRIC HOT WATER HEATERS, Thermostatically controlled for any hot water heater.—Vulcan Electric Co., Danvers 17, Mass.—**[ADV. 18]**

ENGINEERING, Construction—Neale Construction Company, 432 Crane St., Topeka, Kans.—**[ADV. 19]**

FIRE POTS, FURNACES, Etc.—Clayton & Lambert Mfg. Co., 1701 Dixie Highway, Louisville 10, Ky.—**[ADV. 20]**

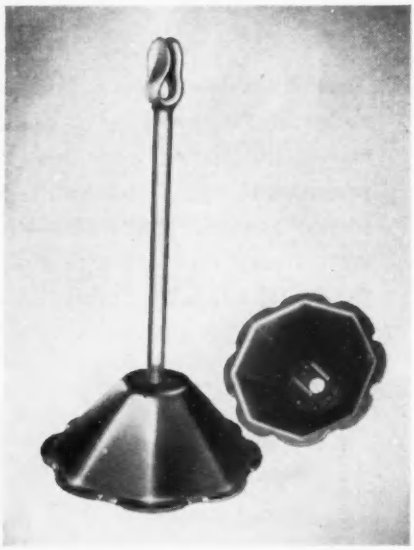
FIRE POTS, FURNACES, Etc.—The Turner Brass Company, 823 Park Ave., Sycamore, Ill.—**[ADV. 21]**

FURNACES—For quickly and economically melting lead and parafine—Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.—**[ADV. 22]**

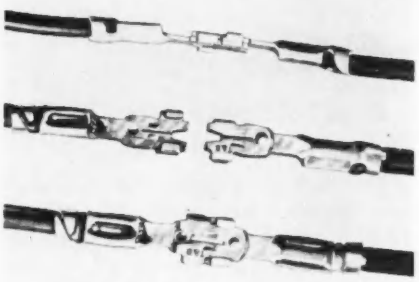
INSULATORS, Porcelain—Porcelain Products, Inc., Box 300, Findlay, Ohio.—**[ADV. 24]**

LIGHTWEIGHT PULLERS—Coffing Hoist Company, 800 Walters St., Danville 5, Ill.—**[ADV. 25]**

MAILING SERVICE FOR MANUFACTURERS—We will address and mail your direct-mail sales pieces to every telephone company in the United States. Telephone Engineer Publishing Corp., 7720 Sheridan Road, Chicago 26, Ill.



The manufacturer claims the new 8-way steel cone anchor formed of drop forged steel cuts the cost of guying in hardpan, adobe clay, or rocky soil compared to that of cast cones yet offers the same holding strength. Designed for use with a tamped rock fill, the anchor has eight flat faces which wedge against the fill. A flaring base supports the rock at the bottom of the hole, increasing the effectiveness of the wedge. A nut retainer locks the anchor securely to the rod for ease in installation. Anchor is made in 8", 10", 12" and 16" diameter.—Check New Product 166.



Aptly named the "wristlock", which it resembles in appearance and action, this new "Sta-Kon" Disconnect consists of two identical halves. Thus it is not necessary to mate unlike parts. Halves can be simply meshed and locked securely together by hand. The manufacturer announces that because of its unique wristlock design, it will not let go in line of pull, and cannot swivel out of connection. It makes a positive electrical connection, features a brazed barrel giving extra strength, and also an excellent insulation grip. Once installed, it can be disconnected in an instant by merely pushing each half toward the other, and can be as readily reassembled at will.—Check New Product 167.

PIPE PUSHERS—Giant Manufacturing Co., South 6th St. at 12th Ave., Council Bluffs, Iowa.—**[ADV. 26]**

PIPE PUSHERS—Greenlee Tool Co., 2136 12th St., Rockford, Ill.—**[ADV. 27]**

POLES, Southern Yellow Pine—Colfax Lumber & Creosoting Co., Inc., Colfax, La.—**[ADV. 28]**

POLES, Southern Yellow Pine—Taylor-Colquitt Company, 290 E. Main St., Spartanburg, S. C.—**[ADV. 29]**

POLES, Southern Yellow Pine—Texas Creosoting Co., Orange, Texas.—**[ADV. 30]**

POLE HOLE DIGGERS—For derrick mounted trucks. Tel-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.—**[ADV. 31]**

POLES, Contract Inspection & Preservative Ground Line Treatment—Osmose Wood Preserving Co., 1443 Bailey Ave., Buffalo 12, N. Y.—**[ADV. 32]**

PROTECTIVE EQUIPMENT—Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.—**[ADV. 33]**

GAS-TITE CABLE TERMINALS—Sub station protectors, main dist. frames; central office protectors; interior junction boxes; lightning arrestors.—Cook Electric Co., 2700 Southport Ave., Chicago 14, Ill.—**[ADV. 23]**

RATCHET LEVER HOISTS—Coffing Hoist Co., 800 Walters St., Danville 5, Ill.—**[ADV. 34]**

REBUILT TELEPHONE EQUIPMENT—USED EQUIPMENT BOUGHT AND SOLD—Independent Telephone Repair Co., 1432 W. 15th St., Chicago 8, Ill.—**[ADV. 35]**

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REBUILT TELEPHONE & SWITCHBOARDS—Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 2, Ill.—[ADV. 36]

RINGING MACHINES—Holtzer-Cabot Electric Co., 125 Amory St., Boston 19, Mass.—[ADV. 37]

SOLDERING IRONS, Electric—Vulcan Electric Company, Danvers 17, Mass.—[ADV. 38]

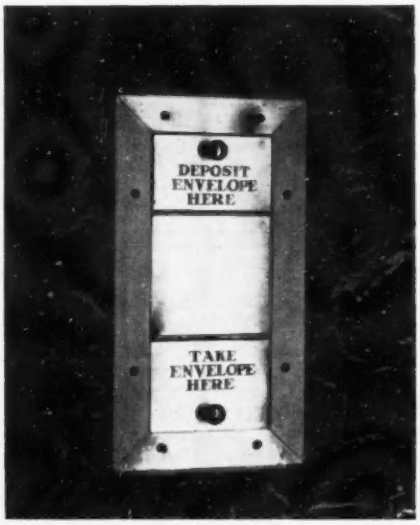
SWITCHBOARDS, TELEPHONES, Etc.—Automatic Electric Company, 1033 Van Buren St., Chicago 7, Ill.—[ADV. 39]

SWITCHBOARDS, TELEPHONES, Etc.—Kellogg Switchboard & Supply Company, 6650 Cicero, Chicago 38, Ill—[ADV. 40]

SWITCHBOARDS, TELEPHONES, Etc.—Leich Sales Corp., 427 W. Randolph St., Chicago, Ill.—[ADV. 41]

SWITCHBOARDS, TELEPHONES, Etc.—The North Electric Manufacturing Company, Galion, Ohio.—[ADV. 42]

SWITCHBOARDS, TELEPHONES, Etc.—Stromberg-Carlson Company, 100 Carlson Road, Rochester, N. Y.—[ADV. 43]



New Wall Depository offers safe means of bill payment after hours. The illustration shows the front that is exposed to view on the street side. This outer portion can be made to harmonize with present construction. The working portion of the depository is in back, out of sight. It consists of a "fish-proof", "jam-proof" construction that enables the person paying the bill to drop envelope containing money directly into a safe on the inside which is provided for that purpose. Front of depository consists of a lower portion that can be raised up and which contains envelopes for bill payment. The upper section can be pulled down, exposing the throat of a shoot that goes directly to the safe on the inside. A wide range of envelope sizes is possible.—Check New Product 168.

New Handy Screw-Holder makes it quick and easy to get any size screw started in those "hard-to-get-at" places and it doesn't let the screws get away. For all-purpose utility, the Handy comes 3 sizes to a set; each set consists of a 10", 7" and 4½" holder. Widths are 3/16" and ⅛". Handles are solid-set wood. The manufacturer claims the hardened tips of the "Handy", while not intended as a Screw Driver, are plenty strong enough to get a screw we'l started—and not "let it get away while doing it."—Check New Product 169.

TIME RECORDERS—Calculagraph Co., 306 Co., 306 Sussex St., Harrison, N. J.—[ADV. 44]

TREE EXPERTS—Davey Tree Expert Co., Kent, Ohio.—[ADV. 45]

TREE TRIMMERS—Seymour Smith & Son, Inc., Oakville, Conn.—[ADV. 46]

TRUCK BODIES—Artisan Products, Inc., 3540 West 140th St., Cleveland 11, Ohio—[ADV 47]

TRUCK BODIES—Highway Trailer Co., Edgerton, Wisc.—[ADV. 48]

TRUCK BODIES AND EQUIPMENT—McCabe Powers Auto Body Co., 5900 N. Broadway, St. Louis 15, Mo.—[ADV. 49]

WIRE. Insulated Drop. Genuine Ironite—Paragon Electric Co., Two Rivers, Wis.—[ADV. 50]

New rubber insulated clips, clamps, and fasteners are designed to prevent slipping, chaffing, cutting and rattling in the securing of wire, loom, tube, pipe, cable, rod, etc. They are available in a variety of shapes and each in a wide range of sizes. Exposed metal ends can be parkerized, zinc plated, cadmium plated, lacquered or enameled to suit the customers needs. Special shapes and sizes are available to specifications.—Check New Product 170.

WIRE. Insulated Drop, HT Bronze, Paraprene or Braid Insulation—Paragon Electric Co., Two Rivers, Wisc.—[ADV. 51]

WIRE. TELEPHONE. for all inside and outside uses—The Whitney Blake Co., Box K, Hamden, Conn.—[ADV. 52]

WIRE CUTTERS—H. K. Porter, Inc., 74 Foley, Somerville, Mass.—[ADV. 53]

WIRE. Insulated—DATED DROP WIRE—Neo-Prene or Weatherproof—Alphaduct Wire & Cable Co., Milltown, N. J.—[ADV. 54]

WIRE. Insulated Drop and Bronze—Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.—[ADV. 55]

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HELP WANTED: Experienced construction foreman for toll and exchange construction, Cable Splicer. Steady work and good pay. Write Box No. 8640 c/o Telephone Engineer.

HELP WANTED: Experienced cable splicers and linemen. Write Neale Construction Co., Inc., 432 W. Crane, Topeka, Kansas.

HELP WANTED: Line and combination man for magneto exchange. State age and references, etc. Write Citizens Telephone Co., New Troy, Michigan.

HELP WANTED: Middle aged couple or woman for nite operator and part time day operator in exchange of 500 telephones. Modern living quarters. Home Telephone Co., Randolph, Kansas.

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POSITION WANTED: Plant superintendent 27 years experience, engineering, construction, maintenance. Desire a change. Home or abroad. Experience in safety and labor relations. Ability to handle personnel and supervise those working under him. Best health and references. Write Box No. 8642 c/o Telephone Engineer.

POSITION WANTED: Journeyman cable splicer, age 34, married. Free Lance splicer. Write Box No. 8641 c/o Telephone Engineer.

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POSITION WANTED: Man with six years experience in pole line construction and maintenance. Veteran, 26, single and in good health. Willing to work for livable wage. Desires position as a lineman anywhere in the southwest. Write Jack Harris, General Delivery, Queen City, Texas.

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WANTED TO BUY: 2-positions Automatic Electric Company's manual common battery switchboard. 2 panel per position basis. Can use with or without multiple. 15 universal cord pairs desired. Write or wire Equipment Superintendent, Southern Continental Telephone Co., Cookeville, Tennessee.

WANTED TO BUY: 200 line C.B. or Universal Switchboard, main frame with protection. Used Copperweld and cable, must be reasonable. Write M. S. Sands, Matanuska Valley Telephone Co., Palmer, Alaska.

WANTED TO BUY: One 150 to 200 drop Magneto Switchboard and frame. Uniontown Telephone Co., Uniontown, Kentucky.

WANTED TO BUY: 200-300 line magneto switchboard in good condition. Address The Laurel Hill Telephone Company, Inc., Laurel Hill, S. C.

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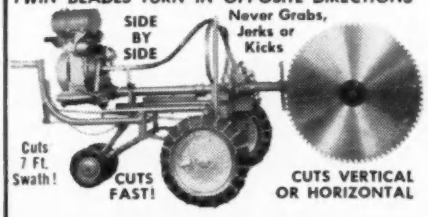

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FOR SALE: One-120 drop Kellogg switchboard (magneto); one-200 pair main frame; one-ringing machine; 200 ft. 200 pair cable (lead covered). Uniontown Telephone Co., Uniontown, Kentucky.

FOR SALE: 85-station magneto exchange in Clearfield County, Pennsylvania. Possibilities for expansion. 200 on waiting list. Write Penfield Telephone Co., Penfield, Pa.

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FOR SALE: Telephone exchange in farming and ranch country. Two switchboards serve three small towns. For more information, write Emmitt Hill, Manager, Woodford Telephone Co., Woodford, Okla.

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A. B. Chance Company Appoints Sales Managers

The A. B. Chance Co., Centralia, Mo., has appointed a manager of sales in charge of each of its three major product lines.

O. G. "Andy" Anderson has been appointed manager of sales—hot line tools and conductor specialties. Anderson has been Missouri Valley division sales manager for the company and chief hot line tool demonstrator.

L. R. Crane, former engineering specialist with the company is now manager of sales—switchgear and protective devices. Crane joined the company as a sales engineer in 1947. Prior to that time he was application engineer with Westinghouse Electric Co.

L. C. Hansen, will direct sales in the field of anchors and pole line specialties in addition to his duties as assistant to the sales manager. Hansen joined the A. B. Chance Co., as a sales engineer in 1947. He was formerly a transformer specialist with General Electric Co.

U. S. Rubber Appoints Four Division Managers

Four divisional managers have been appointed by the electrical wire and cable department, United States Rubber Company, to supervise sales of electrical wire and cable throughout the country. The appointments were announced by Howard H. Weber, newly appointed general sales manager of the department.

Clarence H. Le Vee has been named eastern division sales manager with headquarters in New York City. He will supervise sales in Boston, New York, Buffalo, Syracuse, Philadelphia, Baltimore, Atlanta and Pittsburgh branches.

J. A. Leuver has been appointed western division sales manager with headquarters in Chicago. He will supervise sales in Cleveland, Detroit, Chicago, Cincinnati, Indianapolis, Milwaukee, Minneapolis and Omaha branches.

Don B. Karlskind has been named southwestern division sales manager with headquarters in Dallas, Texas. He will be in charge of branch sales in Birmingham, New Orleans, Houston, Dallas Kansas City, Tulsa, St. Louis and Denver.

L. M. Guibara has been appointed Pacific coast division sales manager with headquarters in Los Angeles. He will be in charge of branch sales in Los Angeles, San Francisco, Portland, Seattle and Salt Lake City.

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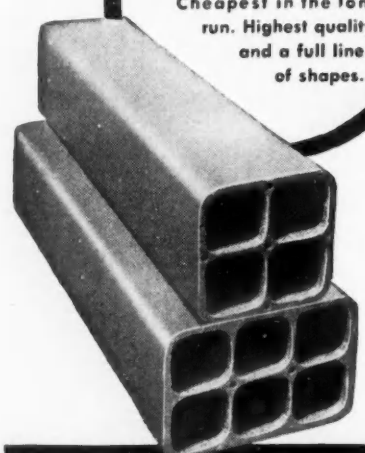

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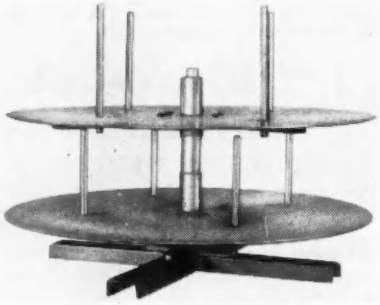

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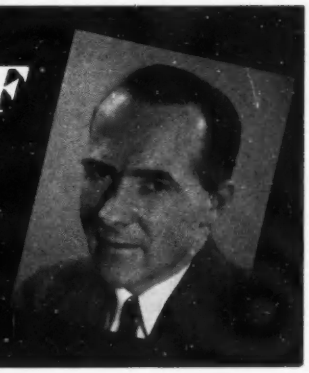


By JOHN G. REYNOLDS
Managing Editor

Why Not More Merchandising? . . . A short time ago, we drove into a small city—one like dozens of other county seat towns in the middle west. On the principal corner of town was the office of the electric company. A large electric sign proclaimed its location and the show windows facing two streets were filled with a splendid display of electrical merchandise.

Upon inquiry we learned the location of the telephone office, which we found in a substantial building but without any special identifying marks and certainly not in a prominent location. We spoke about the difference to the manager of the telephone company, an old acquaintance to whom we could speak plainly, and he gave the following explanation: "The telephone company is in the business of giving service, not of selling merchandise in a legitimate way just as electric companies are doing."

There are a number of accessories that add to the convenience of using the telephone but yet are not properly a part of the service. A display of these accessories and a little selling effort might add a legitimate merchandising profit to the income of the telephone company without in any way interfering with its primary business of giving telephone service.

• • •

Tell It To Your Editor . . . As fall construction and maintenance activities begin, telephone company managers will find that the local newspaper office is interested in real live stories of local interest. Your company probably has some definite objectives which it hopes to reach during the balance of this year and in 1950, even if it's no more than patrolling of lines and minor rebuilding. Now is the time to tell the editor about the plans.

Better still, write up the story of your plans on plain paper without heading or signature, telling the facts just as they are and hand them in to the newspaper office as material from which a news story can be written. Every construction enterprise of any magnitude whatever can be made the source of at least four newspaper stories; one when it is planned, one when it is started, one during the process of construction and one when it is completed. Now is the time to get the favorable publicity that may be obtained by telling the story of your projects.

• • •

"Sandy" Wages Telephone War . . . Seven-year-old Sandy Frazier of Houston, Texas, has called off her "war" against Southwestern Bell Telephone Co. and happily went back to ice cream cones, dollies and the Texas Ranger Club, an exclusive organization of sub-teen-agers whose watchword is independence.

Sandy's "war" against the telephone company started when her new telephone directory arrived and she found that the Frazier number was no longer the familiar Madison 2-2971. Instead it was MA-2971.

Sandy liked the old way better than the new. MA-2971 was too crisp, too cold. So, in due time, the telephone company heard from Sandy. By letter.

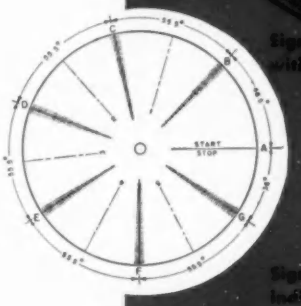
"Dear Telephone Book," the letter read. "You are a bad man. You changed our telephone from M.2-2971. You made it MA 2971. You must change it back. Sandy."

Telegraph Maintenance Men:

HERE'S THE ONLY **PORTABLE** TELEGRAPH TROUBLE-SHOOTER SOLD

That provides a PERMANENT Record of Transmission Quality

SIGNAL ANALYZER



Signal Analyzer chart with perfect signals

Signal Analyzer chart indicating signal error

Portable . . . Easy to Use

Light, simple and compact in design and construction. Unit is 9"x6"x8". Weighs only 18 lbs. Can be moved easily from place to place as needed. Easy to connect, easy to operate. No adjustments or complicated connections required—just plug in and turn on.

Provides Permanent Record

Records signals permanently on paper chart for detailed analysis, quantitative measurement and future reference or comparison. Permits observation of distortion on working circuits and quick identification of sources of error. Useful in alignment and trouble-shooting.

Checks Transmission Quality

Indicates any type of signal irregularity in 7-unit or 7.4-unit code start-stop telegraph circuits. Records distortion on every individual signal pulse as it is received. Can be used to determine condition of signals from transmitting keyboards or regenerative repeaters. Checks operation of receiving printers. Helps assure high transmission quality and continuity by detecting incipient troubles before printing failure occurs.

Time-Saving . . . Economical

Saves circuit time by helping to correct error quickly. Saves time of operating, service and maintenance personnel.

J. H. BUNNELL *& Co.*

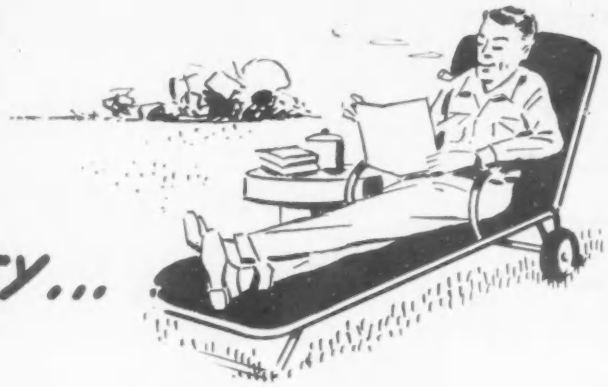
215 FULTON STREET NEW YORK 8, N. Y.

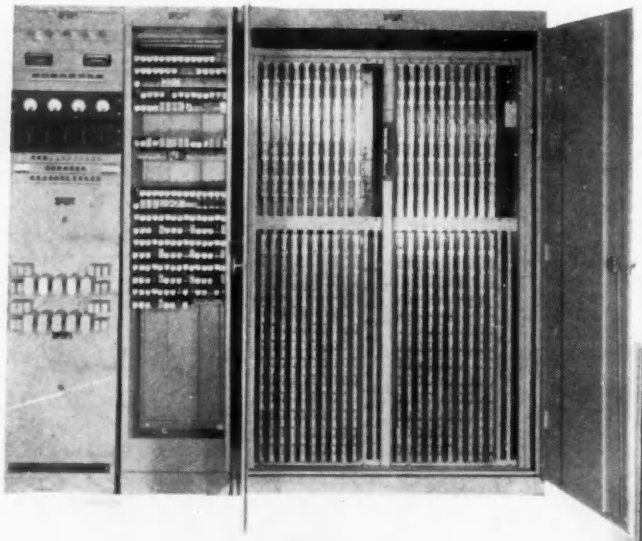
D E P T . 1 2

BUNNELL—a key word in communications equipment

Research, Engineering, Production, and Testing facilities for equipment for: Wire Lines • Submarine Cables • Railroad Communication • Radio Airway Systems • Municipal Signaling • Army and Navy Signaling • Carrier Current • Automatic Telegraph • Facsimile

At Home
IN ANY COMMUNITY...

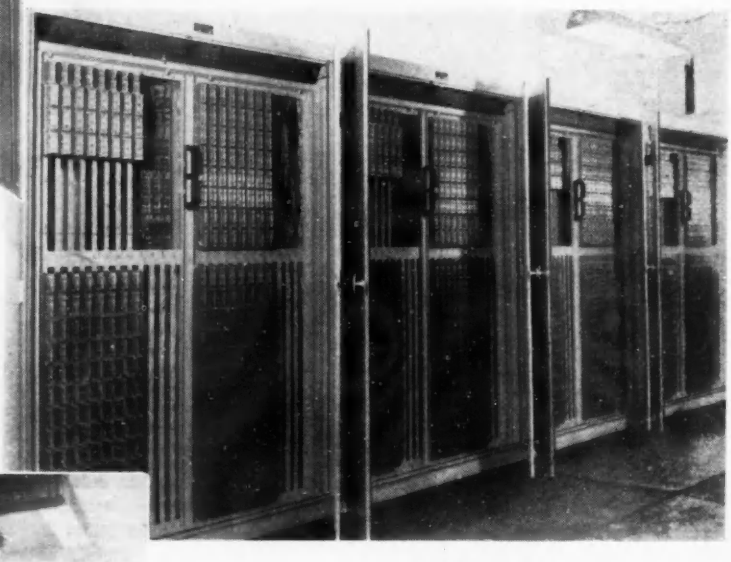




North switchboards, built to handle all exchange capacities, are important cogs in the telephone networks of thousands of American communities. Their record of long, trouble-free, dependable service reflects the precision engineering and controlled production that marks all North equipment.

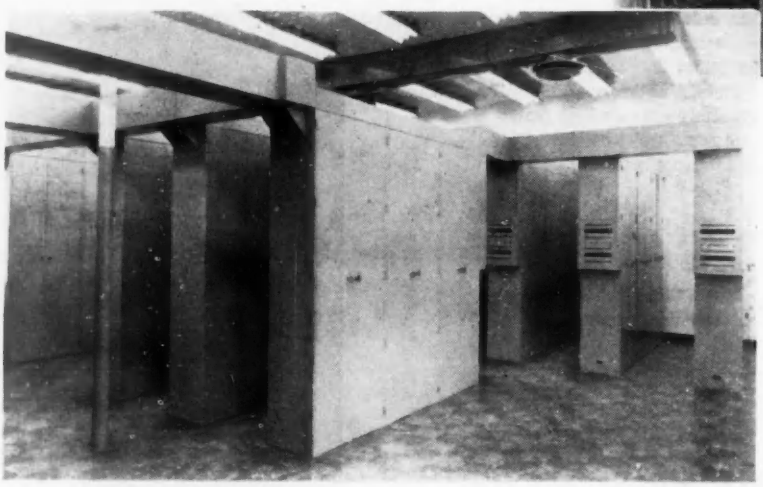
SMALL

community dial switchboards—from
10 to 700 lines.
Flexible and easily expanded.
Add strips and cabinets as required.
100 line switchboard shown.



MEDIUM

city exchange dial switchboards—from
500 to 4000 lines.
Flexible and easily expanded.
Add strips and cabinets as required.
400 line switchboard shown.



LARGE

city exchange dial switchboards—from
1000 to 10,000 lines.
Flexible and easily expanded.
Add strips and cabinets as required.
2000 line switchboard shown.

NORTH

THE NORTH ELECTRIC MANUFACTURING CO., Galion, Ohio, U. S. A.

Originators of **ALL RELAY** *Systems of Automatic Switching*